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OHIO  
STATE JOURNAL  
OF  
DENTAL SCIENCE.

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EDITED BY  
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XENIA, OHIO.

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VOL. III.

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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### CARIES AND NECROSIS OF THE MAXILLARY BONES.

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BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO.

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[Read before Illinois State Dental Society, May, 1882.]

CARIES and necrosis of bone both result from the removal or death of the periosteum, or from the separation of the periosteum from the bone by means of intervening pus. These conditions, however, frequently have their origin in ostitis.

The exciting causes of the diseases under consideration are various: confined dentes sapientiae, for want of room, salivary calculus, traumatism, heavy malleting in filling the teeth of young patients, and other agents capable of producing ostitis or periostitis; but of all the causes of diseases of the maxillary bones, the presence of pulpless teeth and fangs of teeth is far the most prevalent. From such teeth and roots, indeed, originate more diseases of the bones in question, than from all the other causes combined. Caries of bone is similar to ulceration of the soft parts, while necrosis may be compared to mortification or gangrene. The chief difference between caries and necrosis,

is, that caries progresses slowly, not unlike an ulcer upon the skin; simple caries begins upon the surface of bone and gradually goes deeper and deeper until a considerable portion of bone is destroyed, unless it is arrested either by vital force or surgical interference. On the surface of carious bone small accumulations of pus are formed, which, together with granules of bony substance, find an exit through fistulous openings. The pus emanates from the organic matter of the bone.

When necrosis takes place the preceding inflammation overwhelms the circulation; there is swelling and intense pain, stasis of the blood, quickly followed by suppuration, the pus makes its exit through fistulous openings or about the necks of the teeth, and the mass of bone thus involved is deprived of its nourishment and consequently its vitality. The sequestrum is surrounded by an inflammatory process, which has the effect of loosening and separating it from the living tissues. In caries the bone is eaten out upon the surface and dissolved; in necrosis it is usually honey-combed throughout the entire circumscribed mass.

The objective signs of caries of the maxillary bones are, usually, not unlike those of a chronic alveolar abscess, with fistulous opening through the bone and gums. Quite frequently, however, the pus discharges through the cheek if the disease be in the superior maxilla, and beneath the chin if in the inferior.

The same degree of irritation exerted in different patients may be followed by different results. In case an irritation of the periosteum be established in a strong, vigorous patient, free from specific taints, it may result in caries of the underlying bone; but necrosis with the exfoliation of a sequestrum is not at all likely to occur. On the other hand, the same degree of irritation, exerted in cases of anæmic, scrofulous, syphilitic, or debilitated patients, might terminate in necrosis and the loss of a large portion or even the whole of the bone affected. The superior maxilla is more often diseased than the inferior. Of the twenty-three cases treated by me during the past year, nineteen were of the superior maxilla, while four were of the inferior.

#### DIAGNOSIS.

The diagnosis of caries is usually not attended with difficulty. Through the fistulous openings a probe should be introduced, and carried to the surface of the bone. If caries exists, there will be

felt, not only the denuded bone, but a roughened, pitted surface will be detected, when the instrument is brought in contact with the bone. Caries and necrosis of bone with fistulous openings through the gums adjacent to the bicuspid or molar teeth might be mistaken for abscess of the antrum, if we base our diagnosis upon an ocular examination. In antral abscess, as in caries and necrosis, there is swelling and pain, followed by the discharge of pus into the mouth. By the use of the probe a correct diagnosis can usually be made with ease.

Caries may be complicated with, and in some instances due to antral lesions, but, happily, such instances are of comparatively rare occurrence.

#### TREATMENT.

Maxillary caries may be successfully treated by either of the following methods:

1st. All loose roots, or those that can not be made useful by having artificial crowns placed upon them, should be extracted, and all teeth from which caries originates, together with roots that can be crowned, should be treated and filled. If, upon examination, we find that the bone is not diseased to a great extent, if caries has not reached farther than the bone immediately surrounding the apices of the roots of one or two teeth, and has not penetrated deeply into the bone, injections, three or four times a week, of aromatic sulphuric acid, will dissolve the decayed bone and effect a cure. A hypodermic syringe with a long flexible silver point, with blunt end, is an excellent instrument with which to carry the solution through the fistulous opening, and bring it in contact with the affected bone. Before applying the acid the cavity should be thoroughly cleansed and syringed out with a two per cent. solution of carbolic acid, and all pus, loose bone, granules, etc., removed, so that the acid will come in direct contact with the diseased bone and dissolve it. If the affection be in the superior maxilla, the patient should be placed in the recumbent position, the tissues surrounding the fistula should be protected by covering them with napkins or pieces of spunk, and the acid carried into the carious cavity and retained there twenty-five or thirty minutes, so as to permit it to act upon the bone. Aromatic sulphuric acid is the dilute sulphuric acid of commerce, a  $13\frac{1}{2}$  per cent. solution of  $H_2SO_4$ , together with the



aromatic parts of cinnamon and ginger. If aromatic sulphuric acid be used undiluted, swelling of the parts is very likely to follow. The first applications, therefore, should be about one part acid to three of water, and gradually increased to full strength, if the case requires it. The causes and diagnostic signs of necrosis of the maxillary bones have been given, in connection with the description of caries. The methods of treatment alone remain to be described.

Patients suffering from periosteal inflammation, which threatens necrosis of the bone, suffer most excruciating pain, and it is at this stage of the disease that prompt and vigorous treatment should be employed. Useless roots should be extracted, numerous free and deep incisions should be made over the surface of the bone, saline cathartics should be administered, the patient kept quiet and lying in a half recumbent position, so that gravity will aid in terminating the inflammation, by resolution. If such treatment be resorted to early, the disease may be arrested before the vitality of the osseous tissues is impaired. If, however, we find that necrosis is inevitable, that the sequestrum is forming, the treatment should consist in frequently syringing the parts with carbolized rose water, and attending to the general health of the patient. When the dead bone has separated from the living, incisions should be made so as to enable the operator to seize the sequestrum with forceps and remove it without lacerating the soft parts. After the operation, the cavity should be cleansed, and filled with the crystals of boracic acid. These crystals should be placed in the cavity daily, and in addition to this, if the cavity be large, it should be plugged with cotton, or what is far better, wax. Thus plugging the cavity, and reducing the size of the plug from time to time, so that granulations may form, will prevent a depression of the face, which is certain to result if this precaution is neglected.

Case I. Mr. A——, aged 45. Very much emaciated, consequent upon the absorption of pus. I was called in consultation with a physician, and upon making an examination, found an opening through the external plate of the superior maxillary bone just above the first left bicuspid, through which there was a profuse discharge of pus. In addition there was a discharge into the cavity of the nose. The first of these openings had been made by a physician for the introduction of a drainage tube.

The pulps of both bicuspid had been removed and the canals filled with gold. The fillings in the teeth and roots were removed, and it was ascertained that the upper portion of the canals had been imperfectly filled. From this space gases evidently had made their exit through the apical foramen, resulting in the formation of alveolar abscesses. A probe introduced into the fistula came in contact with denuded and roughened bone over a space corresponding in size to a 25 cent silver piece. Patient had been suffering from the affection about seven months prior to my seeing him, during which time he had visited a number of physicians, all of whom believed the teeth to be the cause of the trouble; also several dentists, who thought just the opposite, viz.: that the teeth had nothing whatever to do with the condition of affairs. Diagnosis was caries of the bone, originating from alveolar abscesses of the bicuspid teeth. Drainage tubes were inserted to carry off the flow of pus, and treatment was commenced by washing the parts with tepid carbolized water. Next a solution of aromatic sulphuric acid was injected through the fistula and permitted to remain for fifteen or twenty minutes in contact with the bone. In connection constitutional treatment for improving the general health of the patient was employed. Treatment was continued twice each week for a period of four months, at the end of which time suppuration had ceased and granulations filled the cavity, and by the end of the fifth month a complete cure was effected.

Case II. Mr. B—, aged 42. Had previously rendered dental services for patient, and was called in consultation with a physician. Patient had been absent from the city, had taken a severe cold, and had been suffering eight days from a pain which, commencing in the region of the superior incisors, had rapidly extended back until the bicuspid of either side were involved. When I first saw him he was bordering on septicæmia, his face was very much swollen, eyes nearly closed and cheeks almost on a level with his nose. Pus was oozing from around the necks of all the teeth. Upon opening the mouth a cushion or sack of pus was seen, covering the whole surface of the hard palate, and totally obliterating the palate arch. The gums were pressed downward to such an extent as to cover the ends of the teeth. Upon introducing a probe, denuded bone honeycombed through and through was encountered.

Diagnosis was necrosis of the bones originating in otitis, and involving all the teeth anterior to the molars.

Treatment consisted in evacuating pus by free incisions over the entire anterior portion of the bone, as well as of the hard palate, and washing with tepid carbolized water. The feeble condition of the patient demanded prompt and effectual treatment. Stimulants, as brandy and quinine, were freely administered. The nurse was instructed to syringe out the cavity four or five times per day with carbolized water. One week subsequent to my first visit, assisted by Prof. Gunn, I removed the affected bones, on both sides anterior to the first molar teeth. Carbolized water was used for washing the wound, tonics were continued, the wound healed quite rapidly, the soft parts contracted, and within three months after the operation an artificial substitute was inserted which almost wholly overcame the deformity.

Case III. Miss G—, age 23, very anæmic and of a scrofulous diathesis, chronic alveolar abscess of the left central and lateral incisors had existed, and were treated in the usual manner by the patient's dentist, but without success. The teeth were finally extracted, but the pus continued to flow as freely as before. The dentist then referred the patient to me, with a letter, explaining the condition in which he found her, the treatment he had employed and the result up to that time. Upon examination, caries of the bone was discovered. Treatment consisted in incisions over the surface, scraping away the softened bone and washing the parts thoroughly with carbolized water. Crystals of boracic acid were placed in the wound and covered with a pledget of cotton. This treatment was continued in connection with tonics and other constitutional remedies for about two months, when a complete cure resulted.

Case IV. A gentleman, 21 years of age, presented himself at my clinic at the dispensary, with a fistulous opening over the left superior central incisor. A probe introduced into this opening could be passed back upon the superior surface of the palatal plate of the left maxilla, about two and one-half inches. The bone along the track of the probe was very much roughened and suppuration was constant and profuse. Diagnosis was caries of the bone. The tooth contained a large amalgam filling upon its disto-approximal surface. This filling was removed, the root cleansed and filled. The patient was etherized, and an operation



consisting of cutting down upon the bone, excising the end of the root, which protruded into the carious cavity, and scraping away the softened bone, was performed. The disease had destroyed nearly all of the palatal plate of the bone, together with the alveolar processes surrounding the affected tooth, and posterior to the lateral of the same side, and central of the opposite side. The patient was provided with a syringe, instructed in its use, and discharged. He left the city, and the subsequent history of the case is not known.

Case V. Caries of the inferior maxillary bone emanating from an alveolar abscess of the first left inferior molar. An amalgam filling in the tooth was removed, and the pulp chamber was found filled with disorganized sero-pus. The chamber and roots were cleansed and filled, and an effort made to effect a cure without an operation, but at the end of two months, there being no marked improvement, I decided to operate. An incision was made through the gums, an engine bur passed in, and the diseased bone cut away. The cavity, which was of considerable size, was cleansed and filled with boracic acid crystals. This treatment was continued from day to day for a period of two weeks, when it was discontinued, and in one month subsequent to operating the patient was well.

Case VI. Mr. W——, aged 47, presented himself at my clinic at Central Free Dispensary, suffering from a severe pain in the side of the inferior maxilla. Pus had burrowed through to the integument, and by backing up, had made its exit opposite the orifice of the duct of steno. The sinus extended below the inferior border of the bone, so low, indeed, that drainage into the mouth was impossible. An external incision was therefore made at the lowest part of the sac. Solutions of carbolic acid were injected into the pus cavity, and the bone, which was diseased by the presence of several fangs of teeth, was, after the removal of these fangs, treated by scraping and removing all carious portions. The usual subsequent treatment was employed, and in three months after the patient first presented himself, further treatment being unnecessary, he was discharged.

Case VII. Mr. K——, aged 38. Very much emaciated from over work, was directed to me by a neighboring practitioner of dentistry for diagnosis and treatment. Upon examination I found

that necrosis of the inferior maxilla, involving the incisor and cuspid teeth, and caused, no doubt, by the large accumulations of salivary calculus upon the teeth, far beneath the margins of the gums, had established itself. Assisted by Prof. Parkes I removed the alveolar processes and superior half of the body of the bone, including the teeth mentioned. The patient made a very rapid recovery. Boracic acid, daily applied to the cavity, and tonics internally, constituted after treatment. The contour of the face was restored by adjusting a plate to fit the space formed by the removal of the bone.

Case VIII. Mr. S——, aged 26. Had, previous to my seeing him, been under treatment by a dentist, with a view to adjusting a gold crown with porcelain face to the root of a left superior central incisor. An abscess had formed, which resisted the usual treatment, and swelling had extended very rapidly, involving the periosteum and overlying soft parts of the external surface of the right superior maxilla. The root was found loosened and the bone surrounding and above it. Pus had burrowed back and elevated the periosteum from the bone as far as the third molar. The patient was etherized, and the necrosed bone, with the root, was removed. Free incisions in several places were made down to the bone, and the patient placed in the hands of another practitioner for further treatment, owing to my being compelled to leave the city.

Case IX. Master L——, aged 13, six years ago had all four permanent molars, which were badly decayed on their masticating surfaces, filled with gold. The mallet was used freely in condensing the fillings; the patient complained of having suffered intense pain during the operations and for several weeks thereafter, especially in the region of the right superior molar. A fistula formed anterior to the tooth, near the margin of the gums, through which pus has discharged up to the present time, the patient being now under treatment. The carious bone has been removed, the acid treatment is being employed, and improvement is noticeable. The exciting cause of the disease in this case was, no doubt, heavy malleting.

*Resume.* To avoid the diseases described, first, always remove loose, valueless roots that cannot be made useful by crowning. Second, always avoid the use of cotton or other



material in the filling of roots which will absorb moisture, or admit fluids within the canals, since from these fluids emanate the gases which cause the inflammations that most frequently lead to diseases of the bones hitherto described. Third, never remove a tooth or root, even though the apex is standing up in the carious bony cavity, provided the periosteum intervening the carious cavity and the alveolar border be not dead. This exposed point of the root may be excised, the pulp canal filled, the carious bone removed, and the tooth restored to usefulness.

When chronic alveolar abscesses do not yield readily to the iodine or carbolic acid treatment, caries, although perhaps slight, very likely exists, and the sulphuric acid treatment should be resorted to. When patients suffering from acute periostitis of the maxillary bones present themselves to us, we should unhesitatingly, and without delay, make deep and numerous incisions down upon the bone and relieve the engorged blood vessels.—*Illinois Transactions.*

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## PHAGEDÆNA PERICEMENTI.

---

BY G. V. BLACK, D. D. S., JACKSONVILLE, ILLINOIS.

---

[Read before Illinois State Dental Society, May, 1882.]

At the last meeting of this Society I was urged, by a number of its members, to prepare for this occasion a paper upon the subject of Riggs' disease, so-called. I did not feel ready for this task. My notions of this disease have long been at variance with those held by the profession in general. It was probably on this account that I was urged to prepare this paper. I have, therefore, undertaken to lay my views of one phase of this disease before the profession. At the same time I recognize the fact that in the past my clinical experience has materially modified my views from time to time, and farther modifications may occur in the future as new facts are obtained. With this explanation I will give my interpretation of the facts that have come under

my observation, recognizing that the effort will be necessarily premature.

I do not propose now to speak of the subject of calcareous deposits, except incidentally. That phase of the subject has been well handled by several able men recently, and I do not know that I would add anything to what has already been laid before the profession on that subject, except as to its causative relation to the disease of the alveolar dental membrane. My views on that point will be developed as I proceed.

Many good men in the profession have from time to time expressed discontent with the prevailing opinion, that deposits of salivary calculus is the sole cause of disease of the alveolar dental membrane, originating at the gingival margin. Yet so far as I am informed no one has, as yet, made an effort to accurately describe a chronic destructive disease of this membrane, originating at this point, which is not dependent upon calcareous deposits for its origin. To do this will be the object of this paper.

We fully recognize that inflammation of the gums and membranes of the teeth is constantly occurring from deposits of salivary calculus, and that most of the cases presented for treatment are of this character, but that all of these cases arise from this cause I cannot agree. I will, therefore, divide the cases into two classes:

1st. Cases of inflammation of the gums from deposits of salivary calculus.

2d. Destructive inflammation of the periodontal membranes, not from calcareous deposits.

The first is purely a traumatic inflammation arising from the irritation produced by calculus. The second is not dependent upon calcareous deposits, although calculus may be present. For this second form we propose the name *Phagedæna Pericementi* or *Phagedenic Pericementitis*. We do not forget that the term "phagedenic" might be applied to inflammation from calculus; for it is evident that it is destructive. Yet as this destruction is only in the presence of a visible cause, the term does not apply with anything like equal force. Again, some arbitrary use of terms becomes necessary for the purpose of clear distinction.

In its simplest form this disease is not accompanied by calcareous deposits. It consists essentially of an infectious, chronic, destructive inflammation of the alveolar dental membrane, by

which the part is destroyed cell by cell, fibre by fibre, much as bone is destroyed, particle by particle, in the disease known as caries. There is not necessarily any considerable inflammation of the gums. In the simpler forms the disease is strictly limited to the alveolar dental membrane. The membrane is always attacked at its gingival margin. The disease is first rendered apparent by a red line at the border of the gums. This red line may be very apparent, or only just perceptible, but with my present experience I believe it to be constant as the first symptom. It usually disappears as the disease advances. At first there is nothing more than a slight irritation of the gingival margin of the alveolar dental membrane. After the red line has persisted for some time, close examination will discover that the margin of the membrane is destroyed here and there, so that a thin, flat blade will pass down beside the root of the tooth farther than it should do. This destructive process gradually extends toward the apex of the root; *i. e.*, follows the length of the fibers of the membrane, forming in most cases narrow, deep pockets. This may occur only on one side of the root, or at two or three points about the root. As the destructive process extends lengthwise of the root of the tooth, it also more slowly widens, extending around the root, so that the tendency is to the destruction of the entire root membrane. These pockets are very often confined to one side of the root of a tooth, as to the lingual side of the superior incisors, or to their labial sides; or it may attack the approximal sides. When the disease is confined to one side of the root, as the lingual sides of the upper incisors, the teeth are very liable to be gradually displaced, moving in a direction from the diseased side, so that the teeth will be gradually protruded. In this manner the teeth often become distorted as to their relative positions.

More rarely the entire gingival margin of the alveolar dental membrane is attacked at once and all destroyed together. This I think but seldom occurs, the formation of the pockets being the rule. These pockets deepen and widen and finally encircle the root of the tooth. When the disease is not complicated with calcareous deposits, it often happens that the entire apex of the root of the tooth is stripped of its membrane, while the tooth is still held in place by the membrane of one side near the gingival margin. Even when the disease has advanced this far the gums some-



times look well. They have not receded much, if any, from the neck of the tooth. The condition of the alveolus, in cases where there are little or no calcareous deposits, differs much in different cases.

The margins of the alveolar process usually disappear as the destruction of the membrane advances. Whether this precedes or follows the destruction of the membrane is often difficult to determine, but I have seen enough cases in which it was clearly demonstrable, that the destruction of alveolar dental membrane preceded the wasting of the process, to convince me that the loss of these processes is simply a result of the inflammatory action, and consequent destruction of the membrane. Although the alveolar process is destroyed, the gums remain intact for a long time, frequently until the tooth falls away. If, however, the progress be very slow, the gums may shrink away, exposing the root of the tooth.

I have noted a considerable number of cases in which there was a definite thickening of the gingival margin of the alveolar process in the early stages of the disease. I have satisfied myself that this was an actual bony deposit, not simply an induration of the gums. Afterward a waste of bone occurs next to the periodental membrane, which proceeds until the new deposit is destroyed also.

In slowly progressive cases the shrinkage of the septum of gum, between the teeth, is very characteristic, and is often the first sign of the disease noticed by either patient or operator, especially when the attack has been upon the approximal side of the root; yet we have seen several cases where there was a deep pocket on the approximal side of the root of one tooth, and none beside the root of its neighbor across the septum, in which case the gum has remained complete.

I have seen a number of cases in which the periodental membrane was almost totally destroyed, and yet the gums appeared at first glance to be healthy. Only a short time ago a lady came to me with one of her bicuspid in her hand. She said on account of its seeming loose, she had called the attention of her dentist to it only one month before, and had been told that no disease could be found. Two days before calling upon me she had picked it out with her thumb and finger. Upon examination I found very serious destruction of the membrane about many of the remain-

ing teeth. Here was a case in which the disease had made great progress, and yet with so little show that an operator of good repute failed to discover it, even after his attention had been especially called to it.

Usually the gums do not show much inflammation. They are not red and turgid. They may have a thickened and dull opaque appearance. They may be even less red than normal.

This is the appearance of the disease in its simple, uncomplicated form ; that is, without deposits of calculus.

This form of destructive pericementitis is as fatal in its results as inflammation from deposits of calculus. It usually runs a more rapid course, I think, and is less amenable to treatment. On several occasions I have had the opportunity of seeing the disease in its inception, and have observed its progress until the teeth have been lost ; running its entire course without the presence of calculus at any time. I have a case under observation now which I have been watching for three years. The patient will not come for regular treatment, but occasionally calls for paliative treatment when a tooth becomes a little sore ; thereby giving me an excellent opportunity to watch its progress. When I first saw the case, there was a very distinct red line around about half of the upper teeth anteriorly ; and in the lower jaw around all except the molars. A few teeth have now been lost, and several are so loose that they cannot remain long. One of the superior bicuspids is now retained by the cervical portion of the membrane upon its distal side. I passed my exploring instrument all around, and under the apex of its root. The gums about this tooth are not usually red and swollen ; neither have they wasted away so as to expose the root. They enclose the root very well, and present no mean appearance ; but the alveolar dental membrane is nearly all destroyed.

The same destructive process is going on in all parts of the mouth, and is all in the form of pockets beside the roots of the teeth. In this mouth there is no tooth about which the membrane has been attacked on all sides at the same time. The only calcareous deposit yet found, in this case, has been a little of the ordinary salivary calculus on the lingual sides of the lower teeth. The patient is about 40 years old, wealthy, and in excellent social position. General health fair, but she is not robust.

In another case, occurring in an unmarried lady of about 28, the disease made about the same progress within one year. I have not as yet seen enough of these cases from their inception to form a just idea of the average progress or duration of the disease. It is probably very variable.

Thus far we have spoken only of the simplest form of phagedenic pericementitis, as it appears without being complicated with deposits of salivary or serumal\* calculus. When we say the simplest form, we do not mean the least destructive form, for we have seen the membranes destroyed as rapidly without the presence of calcareous incrustations as we ever have with these deposits.

The greater number of cases that have come under my observation have been accompanied with calcareous deposits in some form. The rule is that we find deposits of serumal calculus in the pockets formed by phagedenic pericementitis. Recently several writers have labored to prove that this deposit is from the exuded serum and not from the saliva. To my mind this presents no difficulty. It is well known that a bullet lodged in the tissues soon becomes coated with some form of calculus; as will any other hard substance lodged in the flesh. The necessary conditions are these: First, a condition of irritation sufficient for exudation. Second, a nucleus for deposits. With these two conditions the deposit will occur if time enough is given, unless the blood be deficient in lime salts. Now, in the disease we are considering we have this character of inflammation, and we have the denuded root of the tooth which serves as the nucleus of deposit. Hence, the rule is, that these deposits are found. In this position such deposits are very hard, and of a dark brown color, adhering very firmly to the root of the tooth. The greatest bulk of this deposit is usually just within the gingival margin of the gum so as to be entirely hid by it; however, it is often found deep in the pockets.

When this occurs in considerable quantity the disease becomes more apparent, the tumefaction of the gums is much greater, and wasting of the alveolar borders will, in many cases,

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\*We use the term serumal, rather than sanguinary calculus, for the reason that this deposit is from the serum which exudes from tissues in a state of irritation, or low grade of inflammation. Such an exudate, although derived from the liquor sanguinis, is of a different composition, and should not be confounded with the true fluid of the blood.



advance more rapidly than the destruction of the peridental membrane. When the alveolar borders disappear rapidly the loss of the septum between the teeth, is usually a prominent feature. The gum will consequently shrink away at this point, showing an apparent elongation of the teeth. This form of the affection is very common, and at one time I was inclined to consider it a distinct form of disease, but further study has convinced me that it results from the true infectious phagedenic inflammation aggravated and modified by the deposits of serumal calculus.\*

This disease may also be complicated with deposits of salivary calculus, in fact is very often thus complicated. I know of no reason why the subjects of phagedena pericementi should not be as liable to salivary deposits as others. Indeed, I think the condition of irritation renders them more liable to such deposits, and in practice we very often find inflammation of the gums from salivary deposits to coexist with phagedæna pericementi.

It thus becomes a matter of importance that we be able to determine whether we have, in a given case, only a traumatic inflammation of the gums from deposits of salivary calculus, or whether we have in addition a phagedenic inflammation of the peridental membranes, for we believe that the treatment for the two forms should be very different. Our prognosis will be far more favorable if we determine that we have only a traumatic inflammation to contend with. The absence of pockets extending down beside the roots of the teeth below the salivary calculus, and the absence of the characteristic fungus will, I think, determine the absence of phagedenic pericementitis. If this disease is not present, we will find, when we have removed the salivary calculus, that the peridental membrane is intact just below it. There are no pockets extending much below the calculus. The calculus may, however, extend so far as to loosen the teeth and cause them to drop out. From my observation I should say that the larger number of cases of the so-called Riggs' disease presented for treatment are of this latter type.

Of the ETIOLOGY of Phagedenic Pericementitis but little can

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\* This form of the disease seems to be that described by Dr. Adolph Witzel, of Essen, Germany, as infectious alveolitis. I received Dr. Witzel's excellent article after writing this paper, but will make several references to it in foot notes.

be said at present. We think it is generally, and correctly, understood that the predisposition to the deposit of salivary calculus is hereditary; but my observation since the recognition of this other form of inflammation has not been sufficiently extended to warrant me in forming an opinion on the subject. It now seems probable that the disease is brought about by the growth of a peculiar fungus, which will be described under the head of Pathology, and that it is infectious; but this cannot now be definitely affirmed. If this be true it will become evident that deposits of calculus, by affording convenient points for the lodgment of spores, will predispose to the true phagedenic inflammation. It is possible that it may be transplanted from mouth to mouth by the dentist's instruments. Aside from this, irritation from any cause may predispose to the disease, such as regulating the teeth or driving wedges; indeed, anything injurious to the margin of the alveolar dental membrane. Among such causes, if they be causes at all, deposits of calculus would certainly stand prominent as a predisposing cause. That this, however, is not the sole cause is abundantly proven by the well observed fact that the disease occurs without the presence of calculus at any time. I have seen no evidence that the disease arises from debility. An analysis of my cases shows that the majority of them were in good health at the inception of the disease. The cases that I have treated have not shown that those in robust health have done better than those in rather feeble health. My treatment has, in some cases, failed in patients whose health was in every other way good, and has succeeded well in some persons whose general health was below par. In one very severe case, in which the diagnosis was unmistakable, there being no calcareous deposits, the patient was debilitated from over work, and fell severely ill with anæmic neuralgia during the latter part of the treatment. I attended her myself through this illness, which was so severe that the condition of the mouth was lost sight of for some two months. On examination after recovery was assured, it was found that the mouth had not suffered on account of the general prostration. The teeth in this case had been so loose that they could not be kept in line, and considerable irregularity has resulted. Yet the peridental membranes are almost complete.—*Illinois Transactions.*

(To be Continued.)



## DENTAL PROSTHESIS.

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BY C. M. WRIGHT, D.D.S.

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[Read before the Mad River Dental Society.]

GENTLEMEN :—I have been requested to offer on this occasion, a few thoughts on the subject of dental prosthesis, although it has been called “thread-bare” for many years. Perhaps, for this very reason, we should be willing to give it more attention than it has received for some time—to cast away the rags and “thread-bare” covering, and rehabilitate it in proper garments. The occasion, too, of the resurrection of the “Mad River Dental Society” may be a most appropriate one for this casting off of the old, and putting on of the new and better ideas about this part of our Art. There is a Science of Medicine and there is an Art ; and it is possible for a scholar to be deeply interested and highly cultivated in the Grand Science without pretending to be even a tyro in the Art. He may have spent years in his laboratory in the investigation of the supposed origin of disease without having the slightest skill in detecting or distinguishing the simplest malady at the bedside. He may, in short, be a deep student of the science, without being an expert in the art. The science and the art are to this extent divided. A physician might, in his leisure hours, acquire an intimate knowledge of the Science of Dentistry ; he might become expert in making preparations of dental tissues for histological studies, for the investigation of the theories in regard to dental caries ; he might become well versed in a knowledge of the general pathological condition of the teeth, and yet, if called to the dentist’s operating chair, could not diagnosticate an incipient alveolar abscess, nor an inflamed pulp, nor a pulp chamber filled with gas ; not to mention the excavating of a carious cavity, and replacing with any dentists’ materials. He does not possess the ART OF DENTISTRY.

The science of dentistry is a part of the science of medicine. I wish to say this distinctly and dogmatically. It is a fact not affected by the disputes of doctors or dentists. The Science of Dentistry is a branch of the Science of Medicine in its broadest signification. It springs from the same root ; is nourished from

the same fluid that circulates in the parent trunk, and all the other branches. I refer only to the SCIENCE, so-called, and not at all to the ART. Here we must make a distinction. The Art of Medicine and the Art of Dentistry have but very little in common, as generally practiced in this country. And the art itself is so distinct from the science in dentistry and medicine, that men do become skillful and successful doctors and dentists with but a limited capital of general science—but, in its stead, cultivated perceptions and trained fingers. The young graduate of several native and foreign schools and universities may really possess very much more knowledge of what is called the Science of Medicine than the old practitioner, and yet, you and I would prefer to trust the man of ART, rather than the man of SCIENCE. The old practitioner, if possessed of natural talent (and this, however important, is like beauty—possessed only by the few, tho' desired by the many), has his senses cultivated to the point of intuition. He sees at a glance—he arrives at a correct conclusion instantaneously—by an unknown and unregarded mental process, that only experienced observation, practiced judgment, cultivation and habit can give. The *Art* is the important part. The Science has no other object, finally, than the practice of the Art. In a country where no disease existed, the science of medicine would have no higher signification than the science of billiards. It would only be a pastime if men pursued it. It is because men are liable to disease, and demand the art of medicine, the art of dentistry, that the wisest men, for thousands of years, have given their lives to the study of the Science of Health and Disease. The curing of consumption is the ultimate object of Koch, of Berlin, in his curious studies and experiments with the germs of tubercle—even if he himself never expects to see a patient. His pupils and all the world of doctors, must modify their *treatment* when his experiments are established. His Science will be felt in their Art. And so it is in Dentistry. Scientific investigation will modify our art. Science and art should walk hand in hand. Science advising—but art doing. Thus far, I am sure you will all agree with me; but can you go with me when I say that we have paid too much attention, lately, to Science—that we have held on to Science and neglected Art—that, in our admiration for Science—in our desire to be considered as members of a Scientific Profession—in our

hope for a recognition by the Medical Profession, we have foolishly neglected our ART. We have let go the meat that we held in our mouths, to catch at the meat that we saw reflected in the water; and we have been in danger of losing the reality for the picture. The many articles on Dental Education that swamp our floating literature, show the tendency of the times. It is, I think, a sound proposition, and one that can, without much ingenuity, be perfectly defended, that "Knowledge that cannot be applied, is worthless, or no knowledge." If Knowledge is Power, it must be applied to exhibit itself. We have fallen down and worshipped knowledge, but have not had very clear ideas about what knowledge is, and have not cared to apply it. On the contrary, for many years it has been rather a term of reproach, very much employed by some of our best men, toward men who applied knowledge simply. For twenty years, I, myself, have heard on all sides, among my brethren such commendations:—"Dr. A—— is a good fellow, yes; but the fact is, he is only a mechanic." "Dr. B—— is a good gold filler, and that is all." Now, when I hear such things from prominent members of the Dental Profession,—men whose judgments I regard—whose opinions I respect,—what must I think? The inference is plain—that for a dentist to be a mechanic, is not the proper thing—the mechanic lowers the status of his profession. These are American views. I might say modern American views, for the fathers were not so foolish. When a scientist like OWENS, and before the congregated dentists of the world, can honestly compliment the dental profession—as Dr. Taft and I heard him, in London, at the World's Medical Congress—on the excellence of the mechanical skill that had furnished him with a denture that gave him as little discomfort as the natural organs, and performed their functions to all intents and purposes as well, we need not blush at possessing mechanical skill. When we can save *easily* and *comfortably* a natural denture by our handiwork, by our mechanical skill in cutting out caries and substituting gold or tin, we are applying the science to the ART of Dentistry. The ART, from the diagnosis to the last polish of a filling, or the extracting and inserting of a plate, is all mechanical. The ART OF DENTISTRY is what dentists propose to practice. The art of dentistry is a mechanical art, and can only be well practiced by a mechanic. Skilled fingers are a *sine qua non* in successful dental practice. We are mechanics. Our profession is a mechanical



profession. Dental therapeusis is mechanical contrivance. And yet, brethren, American dentistry, with all the boasted excellence—with all the self-laudation—with all the assurances that she has heaped upon herself—to use a slang expression—with all her *cheek*—has, in the department of Dental Prosthesis, sadly degenerated. We are a profession of half trained mechanics. We are bunglers. Not one in twenty practitioners (not students or graduates), but practitioners, are skillful mechanics, either in their laboratories or in their operating rooms. The nineteen have never trained their fingers—they have never given their days and nights to practicing to acquire *skill*, expertness, neatness, handiness. They bungle, from the taking of the impression to the finishing of a rubber plate. Now, if you will not accept this statement, which I firmly believe, and base my belief on my observation, and reasoning from the teachings of prominent men in regard to this branch, I say, if you will not believe this, perhaps, you must believe that as far as “art and beauty” are concerned, as far as the selection and arrangement of teeth, and regard for plastic anatomy are concerned, in the Prosthetic branch, we have, as a nation, about as little cultivation as you would expect to find in a Sioux Indian—or Buffalo Bill. In every street car—in every church—in every assembly—in every place—in short, wherever you go in these dear United States, where our so-called civilization exists, you find mouths disfigured by dentists. You do not notice it so much, because, like the Indian who gets used to seeing war-paint, you rather admire it, but cultivated foreigners, other and civilized strangers, and Americans who have lived in England, France, Switzerland or Germany, do notice it from the time they land in New York till—well, till they, too, get used to it—that the disfigurement of the mouth and face by American dentists is a terrible national calamity. We disfigure with gold to a sickening extent. We disfigure with porcelain to a criminal extent. We get other vandals in the profession to disfigure us. I have talked to dentists, within a week, whose teeth, upper and lower, are so bespattered with gold that I could not keep my eyes off of them, and although I have been intent on the sight, to the exclusion of any *expression* of the mind that might have played about their lips, yet, when a laugh has suddenly displayed the whole effect of the bespangled teeth, I have shuddered at the ghastly spectacle. In the American Dental Association that met

last August, the display of china, or bits of white marble, arranged regularly under the lips of several elderly and prominent members, was only another proof to me that we are but little better than barbarians, as far as cultivation of taste goes. I am not saying all this simply to make a sensation, or to keep up my reputation of writing in a pyrotechnic style. I am in the most solemn earnest possible. I feel it in my soul—this disgrace—this glaring fault of a profession that I love—of a class of men that form my only friends, on this and the other side of the Atlantic. Dear brethren; you have known me from boyhood, and you know that I would not bring such a charge against the profession unless I believed it from the very depths of my heart. Is there no remedy? No hope for the future? I think there is. And as I have made the accusation, I would beg leave to suggest a remedy.

*First*—Let us get a little card printed, or neatly written, and place it on our operating tables, so that every time we pick up an instrument it shall saucily stare us in the face—the printing or the writing should say: “The highest Art of the Dentist is to conceal his Art.”

*Second*—Let us sit down and think of how much there is to be learned in the department of Dental Prosthesis; and remember how many students start out in practice after only two or three years study; and let us adopt the English way of taking apprentices to our trade. How you shudder at the idea; but, remember, I shudder at your horrible disfigurement of human faces by your unskillful work. Yes, take apprentices; and let them begin early, and work at the trade of dentistry.

*Third*—Do not use teeth in sets from the combination or any other factories. The dental dealers clothe the American’s mouths with their wares. Pick up odd teeth, cut them down, grind them, break them, repolish, or reglaze in your furnaces. Keep your apprentices busy. Try and give each tooth an expression. If you can do this after you have practiced the mechanical art in your work shop, you will begin to be respected as artists. You will begin to gain reputation. You will begin to receive \$100 from the rich when now grudgingly you receive \$10. You will add lustre to the name of American dentistry. It has a little lustre, now, but it is rapidly getting dull and rusty; and will soon be cast aside entirely, among the nations.

## DR. W. H. ATKINSON AS A CRITIC.

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BY L. G. NOEL, M. D., D. D. S.

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At the annual meeting of the American Dental Association at Niagara in 1878, we presented a paper on Dental Chemistry in which we offered the suggestion that much of the decay met with on the proximate surfaces of the teeth, and perhaps on the buccal and grinding surfaces also, may be accounted for by the theory that lactic and acetic acids are generated by the metamorphosis of starchy foods, these being first converted by the saliva into glucose, the glucose molecule subsequently splitting into acetic and lactic acids.

After the reading of this paper, to which any of your readers who may be curious about the details are referred, as published in the Transactions of the Society for 1878, page 219, Dr. Wm. H. Atkinson, of New York, arose and said :

"This report, like all others on special departments, entirely ignores that upon which it stands. Chemistry cannot stand alone, any more than any other department of science. What we call chemical science is but the chemical aspect of general science. You can not have any consciousness of gathering your ideas together without a chemical process ; nor is there an organization of any kind in which there is not a chemical phase in its production ; and having said that, it is not worth while for me to re-capitulate that which ought to be known to every graduate of a respectable school, viz. : that the changes that are destined to occur, and usually do take place in the stomach, should not be asserted to transpire in the mouth, as was asserted in the paper we are discussing. The secretions that are possible in the mouth cannot produce the effects attributed to them by the report. To find these, we will have to go to the stomach, and give attention to investigations that are not more than ten years old, to enable us to understand the preparation of peptones and albuminoses. If we expect to have our chemistry, which is a part of our dental literature, brought to anything like a respectable status, we must make a new departure, and study it simultaneously with all the other exact sciences."

The writer was not present at the meeting at which his paper



was read, and was not aware it had been so severely criticised by so distinguished a scientist, until a few weeks since, when engaged in looking over the transactions of the Society, and he felt a little chagrined to see only those scathing remarks consigning his paper to the oblivious realm of mere school-boys' twaddle, with no record of any one having lifted up a voice in its defense. We felt abashed. We had based our hypothesis upon what we conceived to be the *established* fact, that saliva has the power of converting starch into glucose, or grape sugar, in the mouth; and it had not occurred to us to read up on the subject at the time, and see if the science of physiology had progressed beyond us! But it must be so, for here was Dr. Atkinson's word for it, given before the great Sanhedrim of dentistry, and no one durst dispute the views of one so long looked up to as authority on such subjects! Surely physiology and chemistry, as we had studied those sciences, had been exploded, and we must learn all patiently over, or never again show our face in the American Dental Association. Turning to a recent edition of Dalton, whose snowy leaves and unthumbed corners shamed us, whilst we sought the record for "Saliva" to see what its properties and physiological action are said, by modern physiologists, to be, we found the following:

(Page 142). "The saliva, like various other animal fluids, has the property of converting hydrated starch into glucose, if mingled with it at or about a temperature of 38 deg. (100 F.) The change is not confined to precisely this temperature, but will go on with diminished rapidity, both above and below it, if the degree of cold or warmth be not too great. It is entirely suspended, however, at the freezing point, and is permanently arrested by the temperature of boiling water. It depends, in the saliva, upon the presence of ptyaline, which acts, in this respect, like the diastase of certain vegetable substances. Like other similar matters which exert a so-called catalytic action, it will produce its effect only within certain limits of temperature, and is most efficient at the warmth of the living body. \* \* \* \* This action of human saliva upon hydrated starch takes place sometimes with great rapidity. Traces of glucose may often be detected in the mixture, in one minute after the two substances have been brought in contact; and we have even found that starch paste introduced into the cavity of the mouth, if already at the temperature of 38 deg., will yield traces of sugar at the end of half a minute. The rapidity, however, with

which this action is manifested varies very much, as formerly noticed by Lehmann, at different times, etc." Again—"If a weak solution of boiled starch made, in the proportion of 3 parts of starch to 100 parts of water be mixed with one-third of its volume of fresh human saliva, and placed in the water-bath, at the temperature of 38 deg., it will often give, in one minute, a prompt sugar reaction with Fehling's test."

"If a thin paste of hydrated starch containing no traces of sugar be taken into the mouth, and thoroughly mixed with the buccal secretions, it will often, as above mentioned, begin to show the reaction of glucose in half a minute."

We read this over a few times and felt better. We might be all wrong, it was true, but it was not so bad since we were to have Dr. Dalton's company and Lehmann's.

It will be observed the doctor admits the transformation claimed in the paper, but says it is absurd to attribute to the mouth changes that can only occur in the stomach. Let us see how well he agrees with the best authorities on this point. Referring to Dalton again, we find the following:

"Some observers (Schiff, F. G. Smith, Flint, Ranke, Brunton) believe that the transforming action of the saliva, which is commenced in the mouth, may continue subsequently in the stomach, in the presence of the gastric juice. Others (Bernard, Robin, Colin) assert that the action of the saliva on starch is arrested by the gastric juice, and as a matter of fact, does not go on in the stomach. This discrepancy, no doubt, depends partly upon differences in the mode of experimentation; some writers contenting themselves with testing the effect of dilute acids only on the saliva, others using the gastric juice itself. \* \* \* \* Our own observations lead us to the conclusion that gastric juice certainly interferes with the chemical action of saliva, usually to a very marked degree, when mingled with it in equal volumes. If we take fresh unfiltered human saliva, which is shown by a preliminary experiment to be capable of producing a prompt sugar reaction in a solution of boiled starch, at the end of one minute, mix it with an equal volume of gastric juice from the dog, then add the starch solution, and place the mixture in the water-bath at the temperature of 38 deg. (100 F.) there is no sugar reaction whatever at the end of five minutes, and only an imperfect one in half an hour, while at the end of an hour there may be distinct reduction by

Fehling's test. But if three volumes of gastric juice be added for one volume of saliva, the mixture gives no indication of sugar even at the end of an hour."

Thus it appears that Dr. Atkinson is diametrically opposed to the text books in this matter; for instead of going to the stomach, as he directs us, we must find these changes, first, in the mouth, retarded, or entirely arrested in the stomach, and again pushed forward vigorously in the duodenum by the pancreatic juice.

Dr. Jno. Wm. Draper thinks the conversion of starch into glucose is only arrested by the gastric juice upon the outer surface of the food mass, as only a small quantity of gastric juice comes in contact with the food at a time. Dr. Atkinson says: "To find these, we will have to go to the stomach, and give attention to investigations not more than ten years old, to enable us to understand the preparation of peptones and albuminoses." Surely he must have been dozing during the reading of our paper, if he understood us to say anything about peptones and albuminoses being formed in the mouth, for we said nothing of the kind; and surely he was not quite wide awake, or he could not have fallen into the grave error of denying, as he did, a fact that ought to be familiar to the merest tyro in physiology, viz.: the power of human saliva, to transform starch into glucose. The best physiological experimenters have found this transformation arrested by the presence of albuminose. We will mention in passing, since the doctor will drag albuminose into the case—At the last meeting of the American Dental Association, at Cincinnati, the Society voted a prize of \$200 for the best essay on the etiology of caries of the teeth. Evidently the Society feels the need of light on this subject. Dr. Atkinson was there, and he spoke feelingly on the subject; said he was groping after "the truth"—we were all laboring for "the great cause of truth"—"God's elect Truth," etc., etc. If that be so, and light on this subject be so earnestly desired, how, in the name of the great source of all truth, can a body like the American Dental Association sit quietly and listen to established truth so perverted and denied as in this criticism of Dr. Atkinson, and not one voice lifted in its defense? If the doctor has so correlated the "Exact Science" of chemistry with all other branches of science, (equally "exact" for that matter) as to prove conclusively to his mind, that starchy food, lodging in and about the teeth, is not transformed by the saliva into glucose, that glucose cannot become acetic or lactic



acid, and these cannot decay the teeth, does he not owe it to the "great cause of truth" in which he labors, to give his reasons for the faith that is in him?

The saliva of dogs, and some other lower animals, does not possess the property of transmuting starch, nor does the secretion of any single salivary gland from the human subject, but the combined or mixed saliva is required to produce this effect.

In 1837, Leuchs discovered this transmuting power of saliva, but it remained for Bernard, by later experiments upon mixed human saliva, to fully substantiate this fact and clear it of all doubt raised by investigators who had confined their experiments to the saliva of the dog. This is now regarded by physiologists generally as an established fact.

All the editions of standard text books on physiology for 1882, including Flint, Dalton, Kirke and others, that we have examined state this as proved beyond equivocation.

We would not do Dr. Atkinson the injustice to set up the statements of these authorities, eminent though they be, as finally settling the question against any more recent discoveries he may have made on the subject. But *if possessed* of such knowledge at the time of his criticism upon our paper, his modesty should not have forbidden the bringing forward of his discoveries. By all means, let us have our text books corrected if they are teaching error, and let us have the "new departure" of which the doctor speaks in all our exact sciences where error is detected.

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## VALUE OF THE PAWPAW IN THE TREATMENT OF INDOLENT ULCERS.

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BY S. S. WILSON, M. D., XENIA, OHIO.

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A short time ago the writer was put in possession of a sample of Infusion Papayæ Foliæ, prepared and presented by the editor of the JOURNAL. The present was accompanied by a request to test its virtues in the treatment of chronic ulcers. Fortunately the *case* was ready for the medicine. It consisted of a number of syphilitic ulcers of the wrist and hand, varying from

a fourth to three-fourths of an inch in diameter. They were in that indolent, lifeless condition so characteristic of many specific ulcers, and were secreting a small quantity of sero-purulent matter. For a long time they had resisted the action of many stimulating ointments, among which was the much lauded ointment of Iodoform and Vaseline. Along with these local applications, the patient was taking, internally, Fl. Extract of *Stillingia* and Iodide of Potassium, which, we may add, was continued during the time that we made use of the Pawpaw infusion.

The latter was applied to each sore on a piece of soft lint, after the sore had been cleansed with soap and water. By the second day, bright healthy granulations were to be seen springing from the surface which had hitherto shown no disposition to heal, if, indeed, it had not grown worse. At the end of four days the new integument had materially encroached upon the area of the sores, and one week's time found them completely covered, at the circumference, with new integument, and at the centers with eschars, under the edges of which the new integument could be seen, still traveling toward the center.

In three days more some of the eschars had fallen off, and the remainder were only feebly adherent. Where they had fallen off, cicatrization was complete, and the appearance of the others indicated that it would become so in them in a day or two. After this the case was lost sight of, for no other reason than that it was in no further need of advice.

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## A NEW DEPARTURE.

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BY WM. A. PEASE, M. D., D. D. S.

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[Modified from a paper read before the Mad River Society.]

PERHAPS there is no diseased condition of the mouth, or rather of the teeth, that occasions so much trouble and perplexity to the dentist, as that generally known by the name of ulcer, or abscess at the end of the root. There is still a doubt as to the primary cause of it, or whether it is the result of any one cause. The condition is this: a pulp has been destroyed, and there are living and dead animal matter lying side by side, and in contact.

Living tissue cannot tolerate the continued contact of the dead, while undergoing decomposition, without irritation and an effort to remove it. They cannot harmonize, it must be removed. The effort to remove it causes exalted sensibility, increased arterial action, which may result in blood accumulation and stasis. This much is known, that nature must provide other, or enlarged channels for the blood that has been flowing to the pulp, and that necessitates time, and, during the interim, there is a condition that is perilous to the tooth. After the lapse of a certain period, which may be called the period of incubation, decomposition begins, and gas is evolved. It is probably during this time that the demarkation between the living and dead parts takes place. But in what condition does it leave the parts relative to each other? Does that separation leave an intervening space between them—a want of contact? After the death of the pulp, and the blood has ceased to flow into it, is there shrinkage, withdrawal of the dead from the living parts sufficient to enable nature to form a cicatrix?—for it must be remembered that the dead pulp is confined in a bony chamber, and cannot be thrown off, as it would be on the surface. This is an important point, and it is also, of importance to be able to estimate the recuperative forces of the system. Whether it is capable of enduring the presence of the dead pulp and the consequent irritation, and still forming a healthy cicatrix, or, failing in this, there is an unhealed spot, the initial point for further trouble. Sometimes, it is true, there is such a robustitude of the system, and the absorbents are so active and healthy, the liquids in the pulp are absorbed leaving the fibrous tissue of the pulp shriveled to a minute quantity, inodorous, and comparatively inert. These cases are suggestive, but exceptional. It is the system with lower recuperative capabilities that gives trouble. In view of these conditions, dentists long since endeavored to remove the dead pulp and thereby enable the raw part to heal, and, by preventing decomposition, to prevent further irritation. But it is impracticable, and in many instances, impossible to remove the whole of the pulp, and in such cases, they have sought to arrest decomposition of what remained by carbolicizing it, and, to that extent, diminishing the danger of irritation, and increasing the toleration of the living parts. The remedies employed have necessarily been antiseptic, and they have been more or less effectual in proportion as the agent was suitable and thoroughly applied. They have pro-



ceeded on the supposition that, a carbolizing material, placed on the exposed surface of the dead pulp, sometimes confined there, would be absorbed, and permeating the substance of it, would arrest further decomposition. Under favorable conditions this would be the case, as a piece of fresh meat, hung up in the open and dry air of Colorado or New Mexico, seldom decomposes; and the human body, after having been salted and otherwise prepared, and then thoroughly bandaged, each bandage being cemented together by asphaltum or some other carbolizing material has escaped decomposition during four thousand years in the dry air of Egypt. The conditions being the same, this mode of treatment ought to be successful, but they are widely different. To the same end, probably from some vague hope of assuring success but without any sufficient or plausible philosophical reason therefor, dentists have carried carbolic acid, or its equivalent, down into the roots of teeth, from which the pulp has been wholly removed and left it to simmer there under a filling. It is difficult to see why this is done, under any rational pathological view of the parts, unless they fear effusion through the foramen from a nunciated place, or that the tubuli contain dead or decomposable matter. There seems to be confusion of thought here, as this treatment is supposed by many to be applicable to an abscess, but why it should be applied to healthy parts is not so obvious, unless it is anticipating. If it is on the theory that the tubuli contain dead and decomposable matter, it is hardly tenable, when it is considered they are so small the blood corpuscles cannot enter them, and the infinitely small amount of the *liquor sanguinis* they may contain cannot be a disturbing element. The healthy need not a physician. Why anticipate disease? Where it is considered that there is an intimate connection between the tubuli and the external periosteum, and that it is by means of the periosteum, that the tooth, after the death of the pulp, is retained as a living organ, it would seem to be the part of wisdom to prevent all irritation of it—to prevent the infiltration of the tubuli with carbolic acid or other acrid chemical agents. Those who recollect the time when pulps were destroyed by an instrument, before arsenic acid was used, especially for pivoting teeth, must recollect how differently the cross sections of the root looked—the one bright and healthy, the other unhealthy, dingy, with striations radiating from the pulp canal into the body of the root, and that the difference

in the duration of the roots was very marked. To this day I avoid using arsenic, when preparing for a pivot tooth, and, also, the infiltration of the root with any chemical whatever. If the health of the root, whether for pivoting or plugging purposes, is of so much importance, it is well to throw around it all of the guards of experience, as well as the light of philosophy and etiology. Those who are in the habit of splitting the roots of extracted teeth to examine, under a glass, the condition of the filling in the tooth, or root, dentine, or dead pulp, if any there are, have had revelations worthy of thought. They have found that the antiseptics, carried into the root with the filling, have failed to antisept, although often, after many years, corked in there by a filling, the odor of the agent remains. This was to be expected, when the favorable condition of the pulp is taken into consideration to resist the action of antiseptics in the presence of animal heat and moisture. No agent, yet discovered, that is at all applicable to the case, can resist them. Take a piece of the best cured and thoroughly smoked ham, and a piece of the best salted pork, cover the one with creosote, and the other with carbolic acid, and they will both decay, if submitted for a time to animal heat and moisture; and it is probable that a piece of a mummy four thousand years old would be equally unresisting. They are but retarders of decomposition, under such circumstances, and nothing more. This is undeniable—the result of much observation and of actual experiment. The question then comes up—can dentists, in view of their own reputations, and their obligations to their patients, continue longer in the old antiseptic rut? Can they afford to temporize, putting off the evil day for an indefinite time, until the denouement comes, bringing shame and confusion, and evidence of incapacity with it? But where shall they go? Whither turn? Are there any other partially, or wholly explored fields, that philosophy can look upon with complaisance, and etiology recognize as worthy of consideration? If so, where?

During many years I have almost wholly discarded the use of carbolic acid and creosote, as prophylactics, after the death of the pulp, or for the treatment of an abscess; and after an abscess has degenerated into a cyst, I have ever considered it as unindicated. To me it has seemed wholly unphilosophical to cork either carbolic acid or creosote within the canal of a tooth, from which the pulp has been wholly removed. As I early found that

antiseptics did not antisept the remains of a wholly unremovable pulp, but only deferred the day of wrath, I was obliged to cast about me for some more effectual treatment, and after various tentative efforts and gropings, it occurred to me that, inasmuch as a pulp canal, well filled, seldom gave trouble, even under unfavorable conditions of health or constitution, the rapid and complete reduction of the dead pulp to inert matter would render it similar to a filling and non-irritating. But the trouble was, to find any material which, when introduced into the canal, was not irritating or subject to putrefaction or fermentation. As water rapidly absorbed offensive gasses, and in the presence of putrefaction or fermenting matter readily parts with oxygen, it was selected as the most available means at my command. The plan of treatment was simple. When a part of the pulp was unremovable, care was taken by the use of the dam or otherwise to prevent ingress of the saliva; then, if an inferior molar, water, either cold or warm, was introduced, and by repeated probings it was carried to the extremity of the lacerated and torn pulp, when the cavity was temporarily filled, and an appointment made. In teeth of the superior maxilla, the introduction of air by means of similar probings was found to be equally effectual. The time occupied in this treatment was less than that necessary to dress and infiltrate the canal with carbolic acid. After the pulp ceased to give signs of decomposition the tooth was filled in the usual way, care being taken not to press the decomposed remains down to, or through the foramen on to the living parts. While I have not fully developed this manner of treatment so as to know what, if any, constitutions or idiosyncrasies are exceptional, it has given me so much satisfaction I feel justified in laying it before you.

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## THE AMALGAM QUESTION AGAIN — ITS MORAL ASPECT.

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BY DR. J. A. ROBINSON, JACKSON, MICH.

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DEAR WATT: I am glad your journal is so free in the discussions of all questions connected with dental science. The loud talk of the writers, and often weak convictions of the readers may lead inexperienced practitioners into errors that are very hard



to overcome. Convictions as to what is right and wrong, useful and pernicious, deeply engraved on the young and inexperienced, by early education, become so firmly grounded that they are not easily removed or shaken off. Error is oftentimes more cohesive than truth, and particularly when it is coupled with great ease or lack of individual effort.

So before the subject fades out of the public mind, and while the journals are alive with the discussions on the surest way to preserve teeth when partially decayed, let us ask ourselves the question as to the specific object of the untiring thought and labor of the truly conscientious dentist.

There can be but one answer, and that is, the best method and the best material to save decayed teeth.

Without trying to answer the unmeaning rhapsodies, as set down by the advocates of the new departure, and the senseless declarations given without a reason, or without evidence in their creed, as published in the journals, let us inquire what influence amalgam and the filling of teeth with amalgams have on the dentist; have on the *man*. It will not be denied by the advocates of the new departure that the amalgams of commerce, containing mercury, are resorted to in nineteen cases out of every twenty, for saving teeth. Now, without going into the deleterious influence of amalgams on the physical system, let us discuss this question only as an article to preserve teeth when decayed, and inquire a little about amalgams.

It is an admitted fact that everything that is hardened by crystallization must necessarily become smaller by the process; and although there have been many declarations made, and many experiments tried to disprove the shrinkage of amalgams, that naked fact remains, and must remain true; an apparent truth and an absolute truth are altogether different things. It is an apparent truth that the sun rises in the East and sets in the West; but such is not the fact. It is an apparent truth that we see things outside of ourselves, but the fact is, we see things within the retina of the eye.

It is the truth we want, and nothing else. When any theory has become sentiment, there is no reason or logic that will dislodge it, any more than we can reason away love, or hate, or any of the passions. So, to the confirmed advocates of the new departure, it will be useless to spend any more time or ink. They

will have to die off to relieve the world of their error as we progress onward in the excellence of our calling.

The best way to test amalgams, is to fill a few teeth and let them lie in an office drawer a few months, and then examine them with the aid of a strong magnifying glass, or under the microscope, and the most incredulous cannot fail to become satisfied that all amalgams, (some more than others) crawl away from the margins of the cavities in the process of crystallization; and when that is acknowledged, it is only a question of time how soon the tooth will be lost, from disintegration and decay. A tooth to be saved by filling with any substance must be *hermetically sealed*; it is as necessary, as that canned fruit should be kept entirely tight to be preserved from decay. It will not do to say that there are no teeth that have been preserved by filling with amalgam. So there are many teeth that are partially decayed, that seem to become calcified and never cause any trouble; but it is the average durability of the teeth, that have been filled by the average operator, that must be taken as a standard to find out the truth. It is not any single act in life that will decide whether a person is good or bad, but what he does daily; the deeds that come from the heart, and what we delight in, are what constitute character and make men either good or bad. The supply of amalgam in the world is very great, and the temptation to use it is as great as the supply. One great obstacle in the way of reform lies in the fact that the manufacture of this article is very profitable, and those who sell dental goods make larger profits on their sale than on any other commodity, and every one is anxious to make money. The dealer in dental goods is a mere merchant, and knows very little of the wants of the world; he knows only about the goods he sells, and those instruments and appliances for doing the work, and is not expected to even go into the philosophy of dentistry, nor to analyze the product or the qualities of the goods that are in the market. He is dealing with merchandise, and leaves the good or bad influences of his articles to those who use them, and apply them to their patients. But the love of money and ease among the dentists is what we have most to contend with. The process of filling teeth with the trowel is more simple than the work of the ordinary stone mason. It is simply plastering up holes that time and the acids of the mouth have disintegrated in teeth deficient in lime salts. Within the past two weeks I have



examined the mouth of a man who had fourteen teeth filled on the *new departure plan*, that presented the appearance of teeth in a common wood-saw,—every one of the fillings had failed, and most of them were entirely out, and a number of them were decayed to the nerves, and they had not been filled over three years. Now it does not seem possible that the like could be found with gold, even by the most unskillful operator. This gentleman was made to believe a lie, that his teeth might be damned. The whole experience of a life has not presented such a pitiable sight from gold fillings, even when they are pronounced to be failures. The true artist does not value time or patience to accomplish his highest ideal. Now, true happiness is found in seeking for something beyond the present; and the amalgam worker can never realize that any more than the man who shovels the dirt in the street, and realizes that when one shovelful has been moved he has only to repeat the process for his daily bread.

“Work without hope draws nectar in a sieve;”

“And hope without an object cannot live.”

The real dentist must of necessity be something of a man of science, and he cannot afford to be a mere money-maker; for it is the end of all science, and while it is necessary for the professional man to be well paid for his labor, if his thought and energy are expended entirely in money-making, it will be as fatal to his improvement as looking at the head of Medusa: his mind will be turned into dollars, and his heart into stone.

Who sweeps a floor and sweeps it clean,  
Does nothing low, does nothing mean;  
The humblest labor that is fine,  
Makes work and worker both divine.

The perfect flower that decks the trees,  
The perfect bird-note in the breeze,  
Are parts of the divinest plan  
To save and elevate the man.

But when with thoughtless word or deed  
We plant, instead of flowers, a weed,  
Whatever we may think or say,  
No money paid can make it pay.

## Editor's Specials.

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"Write the Vision and make it plain."

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### JOINT PROPERTY.

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THE following paper is the longest ever written by the editor. It was prepared specially for the JOURNAL, but was submitted to the Committee on Volunteer Essays, and read at the late meeting of the Ohio State Dental Society. Though very long, we have been uniformly advised not to divide it:

#### THE ETIOLOGY OF DENTAL DECAY.

[Read before the Ohio State Dental Society.]

FOR many centuries the profession rested in absolute quiet and content, holding that the well-known decay of the teeth resulted from inflammatory disease, regarding the term inflammatory in its ordinary acceptation without reaching out for such definitions as "retrograde metamorphosis of tissue,"—definitions intended to be broad enough to enwrap and hide from view the ignorance of the definer.

As long as the above views were universally held in reference to the etiology and pathology of dental decay, as indicated by the universal adoption of the term dental caries, no progress was made, or could be made, toward rational and proper treatment of this condition. I have elsewhere said, that the discovery and recognition of the fact that dental caries is something else than an ulcer, laid the foundation of dental surgery. This position was criticised with attempted severity by one who is diligently working to roll back the car of dental progress, and who, by virtue of an accidental position, apparently reached as an advertising dodge, may be able to accomplish something in his favorite direction, if still permitted to spend his strength where true progress has not yet reached its average momentum.

For more than 30 years, as some of you can testify, I have endeavored to impress on my professional brethren that this is

altogether the most important question in dental science; and daily I am pained to see how little progress has been made in the third of a century referred to. So little clear thought is yet manifested, that even to-day, not only with the less educated part of our profession, but often with advanced thinkers, it is not thought necessary, or even important, to recognize varieties in dental decay. Though the three principal varieties are not more alike than a horse, a cow, and a sheep,—not more alike than boils, tetters and chilblains—they are spoken of as identical. Phenomena are referred to as found in a carious tooth without the slightest hint as to which variety of caries is spoken of. And this is as true of men claiming to be eminent in our profession as it is of the tyros.

It is well known that the physical phenomena of dental caries are not greatly varied. But three, or if we include what is sometimes called "chemical abrasion," four distinct varieties are found, and the various modifications and combinations of these will explain all the recognized different appearances.

Many of the phenomena of caries can be observed as well, or better, by the unaided eye as by magnifiers. The black, brown, yellow, orange and white colors illustrate this. And the difference in texture of the different varieties is as observable without glasses as with them. No one can fail to see, in the most common form of decay, a state similar to what is sometimes called gelatinous bone, where, to show the organic structure, the solid portions of the bone are dissolved out by hydrochloric acid. The unaided eye can see that, to a good degree, the solid materials are gone from the softer textures; and it can recognize a decided difference in the textures of black and white decays,—can see a complete breaking down in the latter, with but little displacement of materials in the other. Yet at the present time quite a number of writers for the periodicals ignore all these differences, even though they talk much of the microscope, learnedly of leptothrix, and abound in bacteria and other bugs and bushes; and with dogmatic assertion, try to carry us back to the principles held before the dawn of dental surgery—principles which had to be discarded in order that dentistry might spring into existence and take rank as a profession.

Let it not be supposed that I undervalue microscopic research. Far from it. I gave the last dollar I had, to purchase a better

microscope than any I know of in the West, and borrowed money to pay my way home, even though I did not expect to have either time or opportunity to use the instrument in prolonged research. But let me remark that far too much confidence is placed in the statements of those who observe with high powers. This is evident from the almost constant contradictions of observers. There is great danger of optical delusions when observing with very high powers; and the danger increases in proportion to the squares of the powers. Hence the higher the power necessary to make any observation, the more caution is called for in receiving the testimony thus elicited. I am more than delighted to see these researches, but it is desirable to get the good without the evil from them. It is not strange that they receive too much credence. Human faith naturally takes hold on mystery. It is analogous to the weight given to chemical analysis in the popular mind, and which often results in the hanging of innocent men.

The germ theory of decay is lately pressed with considerable zeal. In all articles I have read in this direction, the writers show a very decided lack of clear thought as to what is held by the advocates of the so called chemical theory. Some of them display absolute ignorance in this direction. But this is not strange, for even some holding to the "acid theory" have almost equally clouded views.

Now and then, through all the years of my connection with the dental profession, some wiseacre gets up to tell us that some constitutions are so defective that the dental organs are not well developed, and therefore decay easily. And even when they are all that ought to be expected from nature, by disease, constitutional or local, the buccal fluids become vitiated and cause the teeth to decay; and then he tells us that therefore the chemical theory does not explain all, and he announces his discovery of the "chemicovital theory," and feels that he has lifted the whole profession out of the slough of ignorance.

Of course you all know that the most enthusiastic advocate of the chemical, or acid theory recognizes all these constitutional or local predispositions, but he holds, at the same time, that no tooth is so badly developed that it goes into decay without an exciting agent.

To illustrate what has been termed a lack of clear thought in reference to the chemical theory of decay, it may be necessary



to make a few somewhat lengthy quotations. It is hoped the reader or listener will be patient in proportion to the importance of the subject.

In a paper read by Prof. C. W. Spalding, at the annual meeting of the Illinois State Dental Society for 1881, he says: "In common, I believe, with many other practitioners, I have supposed that an acid condition of saliva prevails, or at least may usually be looked for in most cases of rapid decay of the teeth."

Now, while all the above is true, it shows great lack of clear thinking in reference to the acid theory of decay, which the Professor seems to countenance mainly in his article. Acids diffused throughout the buccal fluids, and therefore quiescent, can not cause dental caries. If the proper acid, and sufficiently concentrated, it may corrode the teeth, especially if dentine or cementum is exposed. But the acid which excites caries, as Dr. W. A. Pease lately expressed it, is generated, "*de novo*, on the spot."

Professor S. goes on to say: "My first experiments were made upon the saliva of a young girl (aged 12), whose teeth were decaying rapidly, so much so that fillings previously inserted, that is before the case came into my hands, whether of gold or other materials, had lasted but a short time, and in whose teeth new cavities were constantly forming, and this at so rapid a rate that cavities of considerable size would form in the space of a few months, notwithstanding pretty thorough cleanliness and good general care. I looked to find an acid reaction of the saliva in this case, and had been reflecting on a course of medical treatment, having in view the correction of the supposed condition of the saliva. What, then, was my surprise, on finding, after repeated tests, that the saliva of this young person exhibited in every test either a neutral or a slightly alkaline chemical reaction! In no one of a large number of tests was there any, even the smallest acid reaction shown. I immediately sought other cases where a similar destructive process was going on, but the result in each case was precisely the same as in the case just narrated. \* \* \*

A professional friend also made similar tests in some very marked cases of rapid decay, with the same results—no acid condition of saliva revealed."

It is unfortunate that Prof. S. and his friend have failed to tell us what variety of decay prevailed in these cases. By making this omission they have almost failed to tell us anything about

them; but it is quite probable the decay was light colored. It is well known that black decay is the least destructive and the slowest in progress of the several varieties of caries, while the light colored is the most rapid and disastrous. It is well recognized, too, by the thoughtful, that an alkaline state of the buccal fluids is a usual precursor of white decay. Many of you will bear me witness, that in the college, and in this society and others, I have diligently warned you of the danger of an alkaline reaction of the saliva, and have persistently urged an acid course of constitutional treatment whenever white decay is prevalent, or tartar is abundantly deposited. I have talked about pickles, vinegar, lemonade, saur-kraut, etc., till your ears have tingled with the names. And why? All well-posted advocates of the "chemical theory of decay believe that the exciting agent—the immediate thing that does the business, without anything between it and the mischief—acts in its nascent state." And the nascent state results from two distinct processes, the effect, that is, the nascent agent's activity, being the same. It may be produced either by synthesis or analysis, as for example, if sulphur is oxidized in the presence of water, sulphuric acid results, and thus resulting, it is nascent. Or a sulphate may be decomposed, the base combining with some other acid, and thus setting the sulphuric acid free, and in this condition it is nascent. You all know that in their nascent state chemical re-agents manifest greatly increased powers.

Because the specific acids, in producing caries, are always nascent, as rapidly as atoms of any of them are formed or liberated, they take hold of the tooth substance, when generated or liberated in contact with it. And this renders it impracticable to find the specific exciting agent in any case of dental caries in an uncombined state. The camel was not seen; but the Arab knew it had passed his tent by the fresh tracks it had left behind it. The specific acids—the exciting causes of caries—are not seen, but their work and its results are plainly observable. When this doctrine is clearly in the mind, no one will be surprised to find the buccal fluids alkaline in mouths affected with rapid decay. In a majority of such cases the alkalinity is due to ammonia, which is a compound of nitrogen and hydrogen, and which is always formed during the putrefaction of azotized bodies, or whenever the vitality of such tissues is so low that it is not able to resist chemical action. And when ammonia is exposed to the action of

oxygen, either nascent or quiescent, its nitrogen is burned or oxidized into nitric acid, and its hydrogen into water. The great affinity of the acid and the water for each other, Liebig calls a disposing circumstance, which he says increases the tendency to the oxidation. I am not unmindful that the paper I read before you last year was pronounced "partly antiquated," *partly* because it was according to Liebig; but a chemical fact in the days of Liebig is a chemical fact still, in despite of the opinions of juvenile chemistry. Those who are duly posted on the chemical theory of decay, and are, at the same time, wide awake, whenever they find a decidedly alkaline reaction of the buccal fluids, resort at once to a tonic and acidifying course of treatment, as they know the great danger that white decay is likely to run a rapid career, unless the tendency is arrested. And their antiseptic treatment is not used by them for the destruction of germs, but to get rid of the tendency to the formation of nitric acid.

In the discussion of Prof. Spalding's paper in the society, Dr. Swain is represented as saying, "Twice during the year I have had in my office a harmlessly insane young lady. In her mouth I have found the saliva uniformly acid, but her teeth do not decay." What acid gave the uniform reaction we are not told; but it was probably the normal carbonic acid, and it was fortunate for her that ammonia was not found to neutralize it. It is unfortunate that such half-way observations and tests tell us so little; but when we think how busy and how tired the ordinary dentist is, we can not be surprised.

But suppose the saliva, the mixed buccal fluid, is all the time acid, and that the acid or acids it contains are sufficiently concentrated to act on the teeth, nothing like the phenomena of any variety of dental caries can be produced. If the teeth are of uniformly good texture as to their entire external surfaces, these surfaces may be roughened, or corroded by the acids. Further on I shall endeavor to explain how the phenomena of caries are produced, in accordance with the so-called chemical theory, and I think no one will regard the results as at all mysterious.

A paper that has attracted some attention on both sides of the water was read before Section XII of the International Medical Congress, August 6, 1881, by Arthur S. Underwood, M. R. C. S., L. D. S., and W. J. Miles, L. R. C. P. Lond., F. R. C. S. and C.

I regret the necessity to differ with such careful and such dis-



tinguished observers; but truth is truth, and men who, from their learning, have a right to exhaust the alphabet in the display of titles, may be mistaken on very small matters. Their paper has been variously published, but I am using it as it appears in the Journal of the British Dental Association, where I first noticed it. It seems to require only moderate attention to see that these brethren have not clear ideas as to the "chemical theory" of decay. For example, they say, "With regard to the purely chemical theory, we cannot accept it as wholly satisfactory for the following reasons." Now I doubt if any educated dentist accepts the *purely chemical* theory, ignoring organic or physiological conditions as predisposing causes.

But a consideration of their reasons for non-acceptance shows a decided lack in their understanding of the so-called acid theory. They say: "1. Because the destruction of dentine, effected by the action of acids alone, under a septic condition, does not resemble caries, either in color or in consistency, it being colorless and gelatinous, the process uniformly attacking all parts of the surface."

They refer to the useless experiment which our boys used to call "tooth-pickling." Putting dentine to soak in, say hydrochloric acid, the lime salts will be dissolved, and the gelatin will be left. But the acid is quiescent, and not, therefore, in the condition necessary for the imitation of caries. They are enveloped by the same cloud which overshadowed Prof. Spalding. In their third reason they gravely tell us: "Further, our own flasks show that malic and butyric acids with saliva in a meat infusion, have not, under aseptic conditions, produced caries." Most certainly not; for these acids never did, and never will produce dental caries under any conditions. Chemical action is definite; and where but a few reactions are observable, as is the case in caries, but few, and just as few, reagents are concerned in their production, and butyric and malic acids are not two of them. They say, too, in this connection, "that acids alone do not destroy a living tissue;" and they apparently try to enforce the statement by the remark, "that the stomach is not digested by its own acids until it has been removed from the body." But they surely do not mean to include sulphuric, nitric, hydrofluoric acids, and the like, in their statement that "acids alone do not destroy a living tissue."



I will quote their fourth reason in full, and think it is plain that their inferences are not legitimately drawn, while the closing remarks show that they have no true idea of the position held by the advocates of the acid theory. They say: "4. Lastly, we would urge that, when caries occurs in the mouth, it is always under circumstances more favorable to the action of germs than to that of acids. There is always, first of all, a minute pit or haven where germs can rest undisturbed and attack the tissue. We cannot, upon the purely acid hypothesis, explain why the same acids that originally caused the decay, gaining access through some minute imperfection of the armor of the enamel, do not in the same mouth, or under the same condition, attack the wounded enamel at the edges of the filling. The germs cannot rest there, they are constantly washed away if the surface is fairly smooth; but the acids literally bathe the part except during the performance of the act of mastication, when the alkaline parotid and submaxillary saliva neutralizes their action."

Now can any one believe that "a minute pit or haven" is a better place for the development of germs than for the formation of acids? And the germs are always washed away from the edges of the filling while "the acids literally bathe the part." Why do not the germs "stick in their holders," as the Irishman did when trying to ride the mule? They need not be washed away if they are like Prof. Mayr's little pets, able to crawl through the holes in normal enamel. (But they do that just to show Prof. M. how small a hole can be crawled into rather than give up a favorite theory). Their allusion to the acids bathing the parts shows that they have not caught the first idea in the acid theory of decay. They are bemixed in the slough of quiescent acids, with Prof. S., whom we quoted at the outset. But if a nascent acid is to cause caries, it needs the "minute pit" for its development more than do the germs. It is very difficult to form, either by synthesis or analysis, a nascent acid at the junction of a well-finished filling with the border of the cavity.

But having got thus far, these gentlemen find their progress arrested, unless they come over to the acid theory. Hear them: "Most probably the work of decalcification, is entirely performed by the action of acids, but these acids are, we think, secreted by the germs themselves." "*We think*," is good. But what acids do

the germs secrete? Chemical action is definite, and but three or four kinds of "decalcification" occur in dental caries.

Time and space will not allow a notice of all the points assumed by these brethren. Let me notice an item or two in their summary. They say: "1. We consider that caries is absolutely dependent upon the presence and proliferation of organisms. That those organisms attack first the organic material, and feeding upon it, create an acid which removes the lime salt." First they beg the question,—at least we may claim the Scotch verdict of "Not proven"—and then they *guess* the little bugs, or buggers, create an acid. Well, what acid? In the experiments, occupying over ten years, with results reported nearly a quarter of a century ago, I was not content to guess at the acids. True, in the most common variety of dental caries I did not find hydrochloric acid dissolving the sulphosphate, and decomposing the carbonate of lime, for the acid being nascent, each atom was saturated as fast as formed; but I did show chloride of calcium pressed out of the softened organic matter remaining in the cavity, and precipitated bone phosphate from solutions obtained from similar cavities. If I didn't exhibit the dragon, I showed his tracks. And instead of the organic matter being first attacked, as those brethren claim, much of it is often found in the cavity, and so little disturbed as to distinctly show its organic structure. And Prof. Mayr, finding the lime salts present in an entirely different form of caries, does not in the least contradict this statement.

Further in their summary they say: "2. That suppuration of the pulp and its sequelæ, such as alveolar abscess, depend also upon the successful working of organisms."

This claim is now common, and was made, in noticing one of the JOURNAL'S Specials, perhaps, by Prof. Mayr, he going so far as to claim, if my memory is not treacherous, that no one had ever held that such action could originate except through the action of germs. The position is held by many of my friends, and by distinguished men for whom I have the highest respect; but they are in error nevertheless. This may appear from various considerations, but first look at the following: The *British Medical Journal* not long ago said this: "A contribution of great importance will be found in the October number of Virchow's *Archiv*. Dr. Uskoff, of Cronstadt, has made experiments which appear to prove

that suppurative inflammation can occur independently of micro-organisms. He injected small quantities of distilled water, milk, oil, pus and turpentine into the subcutaneous cellular tissues of dogs, and examined the tissues microscopically a few days later. He found that the injection of bland fluids, such as water and milk, caused no suppuration, provided that only a gramme or two was injected, but that large abscesses formed when several grammes were introduced. The injection of turpentine, especially when not diluted with oil and carbolic acid, produced, in most cases, large abscesses, containing pus, which was entirely free from micro-organisms. From this, Dr. Uskoff concludes that, although micro-organisms may, in many cases, be the proximate cause of suppuration, morbid process may exist entirely independently of them, being due to chemical irritation, as when turpentine is used, or to damage of tissues, as in cases where a considerable amount of water is forcibly injected. We intend shortly to refer, at greater length, to this important subject."

Few stand higher than does Dr. Uskoff as an experimenter and close observer. Years ago, without any knowledge of other researches in this direction, the writer very carefully conducted a series of experiments, with direct reference to this subject, which fully confirm the conclusions arrived at now by Dr. Uskoff. The record of these experiments, conducted mainly at No. 55 W. Seventh street, Cincinnati, was destroyed by accident. In many of them I had the counsel and assistance of the late Prof. Thomas Wood, whose name is a guarantee of accuracy.

I had also the coöperation of the late Prof. W. H. Mussey, who, although quite too busy to give immediate personal attention, gave most valuable suggestions as to the methods of conducting the experiments, especially with reference to securing aseptic conditions of the appliances used. The hypodermic instruments used were rendered aseptic partly by heat, and partly by carbolic acid, etc. Distilled water and other agents, free from micro-organisms, were introduced into both cellular and muscular tissues of human beings, dogs, etc.; and when it was ascertained that suppuration had taken place, aseptic conditions being still observed, with the hypodermic instrument, pus was drawn out and found entirely free from micro-organisms. This is but a flimsy account of the experiments of Prof. Wood and myself. And while I have never made a claim to be an expert with the microscope, still I



think I could see a beetle or a June-bug, if in full view. But Prof. Wood had few superiors in this line. Had it not been that his native modesty held him back, he would have been recognized according to his merits. It is more than gratifying to find the researches of Dr. Uskoff confirming the teachings of our experiments of 1867 and 1868, which I have repeated, as opportunity served, many times since, and usually, when on human subjects, taking the precaution to seal up the orifice made by the hypodermic point, with collodion. Prof. Wood and his son are both dead, and it is not probable any notes of these experiments can be found among his papers; and I am not sure that he took notes of them. He took none in our nitrous oxide investigations, relying on his very tenacious memory.

If I had not implicit confidence in the testimony of these experiments, they would not be here referred to, and though it is a delicate subject, you will allow me to allude to the fact that my physical disability has given me ample leisure to experiment, and a few of you know that the time has been improved.

A carefully prepared paper was read on "The Etiology and Pathology of Dental Diseases", at the annual general meeting of the Association at Liverpool, by Henry Sewill, M. R. C. S., L. D. S., England. In reference to caries he says: "Caries must be defined as a process of disintegration, commencing invariably at the surface, and proceeding inwards, affecting dentine more rapidly than enamel, and due entirely to external agencies. We are now positively assured of the truth of these facts; that caries is not an inflammatory change, that it does not depend upon any connection, vascular or nervous, with the rest of the body, and that caries may occur even in an extracted tooth, which is retained in the mouth by artificial means, as on a denture or pivot."

Further along he says: "The active agents in caries are acids and living organisms. The acids, malic, lactic, and acetic, are the products of chemical change and fermentation set up in fragments of organic matter, food, mucus, and epithelial scales, which are commonly present in the mouth."

A casual remark often shows an opinion or an error as well as a labored essay could. Mr. Sewell has this remark: "That the acids alone do not produce all the phenomena is obvious from the fact that dentine, after perforation of the enamel, is the favorite seat of caries; whereas acid acting alone would most rapidly



attack the enamel. It is equally inconceivable that micro-organisms could gain access to the dentine without the assistance of an acid capable of perforating the enamel." A little further on he says: "The initial stage of caries undoubtedly depends greatly, if not entirely, on the action of acid, and this stage, let us note particularly, may be induced artificially by introducing a pellet of cotton wool between two teeth and allowing acid to collect in it and to act upon the adjacent enamel."

In the first quotation here the writer has forgotten that enamel is much harder than dentine, and that cohesive attraction is one of the modifying circumstances of chemical affinity. Marble and chalk are chemically the same, and an acid acting on them yields alike results; yet it acts with much greater energy on the chalk, simply because less cohesion is to be overcome. This quotation, too, shows, that the writer fails to recognize the facts that acids are nascent when they cause caries directly. The experiment with the pellet of cotton wool is instructive; but if he had said "allowing acid to" be *formed* in it, rather than to collect in it, he would have been nearer to the correct idea.

The writer is troubled about the color of caries. The black variety is not mysterious. The organic matter is "carbonized," as is a cork sometimes, by sulphuric acid; and animal charcoal is black. And if we take the most common variety of caries, when recent, it is the color of the gelatinous portion of the dentine. This remaining is gradually darkened by oxidation, just as decaying leaves, etc., are darkened from the fact that their carbon is more slowly oxidized than are the other constituents. But I have dwelt too long on this paper, and so it must be abandoned for something later, though some of its other points are worthy of notice.

The last paper it is proposed to notice, in this connection, is from the pen of Dr. C. T. Stockwell, of Springfield, Mass., and is entitled "Etiology of Dental Caries. Acids or Germs; Which?" It was read before the New England and Connecticut Valley Dental Societies, October, 1882, and is, accordingly, up with the times in reference to the principles held by the author.

It is feared that Dr. S. is not well up in the history of professional opinions, for he calls the acid theory, or rather, I suppose he means, the chemical theory, "the old dusty creed," when really it is quite new, never thought of, perhaps, till within the

memory of some now living; and the other theory, viz: that dental decay is caries, similar to caries in other bony tissues, has been held ever since the dawn of medical science. Which is old? Which dusty? Instead of labeling the chemical theory "re-opened for further investigation," as he advises, he would better inquire as to the success of the colored brother who tried to resurrect his dead sheep by inflating it with his own breath through a goose quill. The revival is about as likely to occur in the one case as in the other. Not many are likely to believe that dental decay is an ulcer, even though all the force of the *New England Journal* shall continue to eulogize Prof. Mayr, who is trying to revive this almost obsolete idea. Dr. S. tells us that "This conclusion of Prof. Mayr is based upon a study of chemical facts in relation to dentistry covering several years, during which a large number of experiments and chemical tests have been made in which it was found in every case 'that the lime salts are only slightly diminished in the decayed mass compared with the healthy tissue.'"

Now which variety of decay? Here are experimenters eulogizing each other, and yet so much in the dark that they regard it as of no importance in detailing experiments to give the principal facts. No one expects to find the lime salts removed from black decay, if he has studied the chemical theory; nor does he expect to find the reactions of acetic acid. But Prof. M. seems to think a mare's nest (no play on words) is found because he finds the lime salts, without acetates, in a case of black decay. He did not intend to tell us that it was this variety of caries; but the fact slipped out.

Dr. S. boasts of the "several years" of Prof. M.'s researches in dental chemistry. How many make several? Not very many, as we know; but Prof. M. will not allow that to count, for he insists, if I understand him, that all the long years of Prof. Buckingham's researches amount to nothing. What great discoveries has Prof. M. made in these several years? Great results ought to be heard of, especially since Dr. S. places in his hands nearly every tooth he extracts, and as he extracts sixteen at once, or in a brief period. But again let me remind you, that neither Dr. S. nor Prof. Mayr seem to know that there is more than one variety of decay, though, as you all know, the black and white decays are not more alike than a boil and a blister. Only last week

a man with heavy gloves on, raised his hands and said to me, "Doctor, my hands are sore. What shall I do for them?" He is from New England, and was as definite in describing his hands as are these men in describing the decay of the teeth.

But I asked as to Prof. M.'s great discoveries. Here is one: "The tooth will be destroyed if either the *outer* forces become too strong relatively to the *inner* forces, or if the *inner* forces become too weak." Further down he says, "About the *septica* theory and its principles there is no longer ignorance among us. We may consider the facts settled. But why does not healthy tissue become attacked like diseased tissue? To explain the fact, we have again to go back to the simpler forms of bioplasm to amoeba. Amoeba may live in water containing bacteria; but why? Simply because they eat them up; or, to express it more scientifically, the bioplasm of the bacteria becomes a part of the bioplasm of the amoeba, the latter being in excess and a more stable compound. The same will happen with a tooth; *bacteria may enter healthy enamel*; their number, from the great density and closeness of the net-work of the enamel, is only small at one time, and the fibrils within, being on guard, so to say, do nothing more or less than dispose of the entering bacteria, by way of *assimilation*. Thus, as long as the fibrils prove stronger, the bacteria will not gain entrance; but let the fibrils become weakened and they will crowd in. The danger of a part of the enamel being taken away lies in the fact that the dentine, being provided with much wider canals, the bacteria may enter in much larger number, and thus overpower the fibrils of the dentine."

I have quoted this at great length. It is either the best specimen of sharp-looking extant, or it shows what small holes things will crawl into for sake of a pet theory. Prof. M. has found a hole to retreat into, smaller than those in the enamel through which the bacteria crept. Even Dr. S., though his eulogist, seems discouraged about following him through the little holes. He says, "The statement of Prof. Mayr, also regarding the possibility of bacteria entering 'healthy enamel' seems, in the light of these investigations, to be less visionary than many have supposed."

Why speak of the *possibility* of the bacteria entering healthy enamel? Prof. M. teaches us they "may," and that there is nothing to hinder, except when the "fibrils" are strong, wide awake



and a little hungry, they eat the little buggers as fast as they go in, which is hardly fair play. They ought to let them get fully within, and then stand up to them in a fair manly fight.

Some have stupidly (?) thought the enamel is a protection to the dentine beneath. It seems the fibrils are the sentinels on picket duty—"being on guard," as Prof. M. puts it. Dr. S. speaks of the entrance to the tubuli being barricaded by mineral substances; but what a mistake, when Mayr's bugs crawl right through them. The fibrils are the barricades; and a course that tends to invigorate them and sharpen their teeth, is the proper prophylactic treatment. Nor is it a mistake, as has been intimated, to put in the limesalts, even if acids are the main source of danger; for the teeth were made to grind the food, and fibrils would not answer. Besides, in the structure of the human body, all is made for use—all is made with reference to life. Nature has not formed the human frame for death—has made no provision for it.

Near the beginning of this paper I spoke of optical delusions, and that the tendency thereto increases in proportion to the squares of the powers used. This may explain the many contradictions. They are very abundant with the advocates of the germ theory who claim to tell just what they have seen. We have room to notice but one now: Dr. Miller of Berlin claims to have specimens "bored through and through" by leptothrix, as well as by other micro-organisms; while Dr. Sewill, of England, says the leptothrix "never penetrates below the surface." I am tempted to add that Dr. Sewill says "it is inconceivable that micro-organisms could gain access to the dentine without the assistance of an acid capable of perforating the enamel," while Prof. Mayr sees the little fellows walking right in and playing the mischief, if the fibrils happen to be in delicate health. Seeing the bacteria going right through healthy enamel is the grandest discovery of modern microscopy. Some, who are naturally incredulous, will doubt the statement; but all such will incur the criticism of the *New England Journal*, with its six or eight editors, one of them "scientific." Therefore, be cautious.

Dr. S. seems to think that the chemical theory is squelched because alkaline mouthwashes, etc., fail to serve a good purpose. "Acid agents would serve a better purpose," he says. Well, what of it? Can you not bear me witness that in the journals, and



before this society, and elsewhere, though an earnest advocate of the chemical theory, I have perseveringly and persistently urged the use of acids as preventives of decay? Do not Drs. Rehwinkel, Jennings, and others recall my eulogy of saur-kraut for this purpose? How many of you have given me the pet name of "Old Pickle," on account of my almost continually calling your attention in this direction? Was this a symptom of abandoning the chemical theory? Nay, verily! Dr. S., further down, tells us that an alkaline condition of the salvia is as productive of *a certain class* of germ development as an acid condition is of *other classes*." But he seems to care nothing at all whatever for the cause of the alkalinity; but as that condition of the buccal fluids is often, if not generally, caused by ammonia, you will bear in mind that this is a frightful precursor of the most destructive form of dental caries. And in this connection, he urges the importance of correct diagnosis, yet gives it so little attention himself that he seems not to care as to the cause of the alkalinity, nor as to the variety of caries to be considered.

Dr. S. also quotes from Surgeon George M. Sternberg, of the United States army, "as an indorsement of this position of Prof. Mayr," leaving us to infer that the position to be indorsed is the statement that "bacteria may enter healthy enamel," a position which Dr. S. himself intimates is somewhat "visionary" But the main point in the quotation from the Surgeon is that when vital resistance of tissues is reduced the parasitic organisms can overcome them more readily; but that proves nothing for the germ theory, for as vital power is reduced, chemical affinity acts with greater relative power; for who does not know that vitality is one of the modifiers of chemical force?

Dr. S. tells us that he is "quoting Prof. Tyndall in substance," in saying that if any putrefactible substance is excluded from the air, or if it is exposed to air from which all germinal matter is excluded, no putrefaction will occur. "In other words, no germs, no putrefaction;" but this is flatly contradicted by the experiments of Dr. Uskoff already quoted, as well as by the very careful experiments of the late Prof. Thomas Wood and the writer, as referred to in this article.

But the fearful length of this paper, and nothing else, prevents a reply to every position of Dr. S. adverse to the chemical theory of decay. The remaining ones are more easily answered

than are those noticed. One remark of his will yet claim attention and then his paper must be dismissed. He says: "Our attention in the past, has been directed too exclusively to simply the inorganic portions of the teeth. It has been the decalcification of the teeth, the *non-vital limesalts, etc.*, that has (have?) absorbed our attention to the exclusion of a proper conception of the vastly more important part that *protoplasm* plays in the life and existence of these organs."

Now who has been slighting the organic materials of the teeth? I know of no prominent writer who has advocated the chemical theory of decay who has not stated the action on the organic, as clearly and as fully, as that on the inorganic portions of the tooth, when describing the action of the exciting agent in each of the varieties of caries. In WATT'S CHEMICAL ESSAYS, in the articles "Thoughts on Caries," and "Chemistry of the Mouth," I know this will be found true. (See Appendix to Taft's Operative Dentistry.)

With some thoughts on the nature and circumstances of dental decay, this long paper must close.

Many are puzzled to know why caries is found in definite spots, if the chemical theory is the true one. Let it be borne in mind that the acid immediately causing the decay is always nascent when doing its work. Many reasons explain why it is generated, or liberated at particular points. Then the microscope reveals places in both enamel and dentine imperfect on account of imperfect organization. These points yield to chemical action much more readily than normal structure; and this is one reason of the definite position of caries. And now suppose the exciting agent has, through a defective spot, got within the enamel, it acts on the dentine, and is not readily washed away by the fluids of the mouth, or even by the brush. Take, for illustration, a case of white decay. The exciting agent is here able to break down all tooth tissue. It acts on the inorganic a little more readily than on the organic. It does not form with tooth material, as highly soluble compounds, as does the agent, or agents, in causing chemical abrasion. The destroyed tissue will, in part, remain within the cavity of decay, but most of it can be wiped away with lint, or washed away by a stream of tepid water. Not nearly so much of the decayed material can be thus removed from a cavity formed by the colorless, or brown variety of caries.

Now, for the present, assume that white decay is immediately caused by nitric acid, and that this acid is formed by the oxidation of ammonia. As ammonia is composed of nitrogen and hydrogen, its oxidation results in nitric acid and water, Liebig and other authorities state that it is always thus oxidized in the presence of free oxygen. And if it was in Liebig's day, it is now. Remember, too, that ammonia always results from the putrefaction of nitrogenous organic compounds. Suppose an atom of nitric acid has got through the enamel—not through the hole that Mayr's bug goes in at—but through a defective spot. It acts on the dentine—faster on the lime than on the gelatin. A thin layer of the limesalts is dissolved, and of course, a thin layer of organic matter is left. By putrefaction it gives ammonia, to be oxidized into nitric acid, to dissolve more lime, and expose more organic matter, to putrefy and give more ammonia, to be oxidized into more nitric acid, to dissolve more limesalts,—and thus, on and on, till the pulp cavity is reached. Such is white decay.

Now, is the presence of germs necessary to explain the burrowing found in this variety of caries, as is claimed by the germ theorists? If Dr. Sewill is right, that leptothrix are found only on the surface, they cannot burrow, as can nascent nitric acid manufactured on the spot, and getting into its work as fast as it is generated.

We might illustrate the most common, and the black decays in a similar way, but time, space, and strength rebel.

A President of a Theological Seminary was asked by a somewhat alarmed pupil if he thought that Christianity could stand up against the present teachings of science. The calm old President asked: "What are the present teachings of science? I have not read the dailies this morning." It would be well for the germ theorists to agree on some general principle before asking us to abandon attainments made by years of research, and the most laborious and carefully conducted experiments. I have already alluded to the great liability to mistakes when using high powers, and that this liability increases in the ratio of the squares of the powers. Some of you remember the bitter disputes at the meeting of the American Dental Association, in Boston, in 1866, if my memory is correct, the basis of the disputation being, not principles nor deductions from observations made, but a simple dis-

agreement as to what was actually then seen through the microscope.

And now we have a fresh illustration that these modern microscopic researches are to be taken with a good degree of allowance. I refer to the so-called discovery of Koch, who claims to have found out that tubercle is caused by a living parasite—the bacillus. Vast numbers claiming to be scientific, jumped with delight, showing a credulity worthy of marines and gossips, when this announcement was made. But now comes the *Chicago Medical Journal*, with the statement that it will soon publish an article by Dr. H. D. Schmidt, a distinguished microscopist of New Orleans, who claims that this bacillus is not an organized body, but a fat crystal. Dr. Schmidt declares he can produce, artificially, every form of Koch's bacillus. So again we see that chemistry is not exterminated by micro-zoology; but the point is the uncertainty of these high-power observations.

This paper is far too long; but I have felt it advisable to aim at covering the whole ground of disputation now, fearing I might never be able to resume and finish up, if a part were postponed. And though mainly written during a period of extreme physical suffering, I hope it will be read with profit.

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## DENTAL DEPARTMENT OF THE UNIVERSITY OF CALIFORNIA.

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THE Dental Department of the University of California held its *first* commencement exercises at B'nai B'rith Hall, San Francisco, on Wednesday evening, November 8, 1882.

An address on behalf of the State was delivered by Governor George C. Perkins, and also one on behalf of the Board of Regents, by Rev. Horatio Stebbins, A. M., D. D.

The valedictory on behalf of the Faculty was delivered by the Dean, Prof. S. W. Dennis, M. D., D. D. S., and that on behalf of the graduating class by Henry John Plomteau.

The number of matriculates was thirty-two.

The degree of D. D. S. was conferred on the following members of the graduating class by W. T. Reid, A. M., President of the University :



Thomas Watson Hall, Oakland, Cal.; Charles Wesley Hibbard, San Francisco, Cal.; Thomas Morffew, San Francisco, Cal.; Henry John Plomteau, Oakland, Cal.; Charles Wesley Richards, San Francisco, Cal.; William Harry Stanley, San Francisco, Cal.; Gustav William Sichel, M. D., San Francisco, Cal.; August Van Crombrugghe, San Francisco, Cal.

N. B.—Unlike the Eastern colleges the Medical and Dental Departments of the University of California hold their sessions in summer instead of in winter.

Verily, the young giant of the Pacific starts off with all the force of a veteran, and why not? The men are there to do the work.—ED. JOURNAL.

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### DELAYED ARTICLES.

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A NUMBER of valuable contributions have to lie over, as well as several of our own Specials. In choosing, we had to hold over such as would not spoil, being good for all times; and we had to pay attention to the desirable variety that all want in a periodical. An illustrated case from Dr. G. W. Keely may be expected in our next issue, and we hope to have quite a number from him during the year—would like one for each month. Our own long Special has taken up too much space, but many of our friends protested against dividing it, and many asked for its early insertion, and we yielded.

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### DEATH OF DOCTOR KENDALL.

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DR. M. W. S. KENDALL graduated from the Ohio College of Dental Surgery in 1854. That class seems specially dear to us, and possibly because of a double relation borne toward it. The great philosopher, Elijah Slack, M. D., D. D., L. L. D., had been stricken with paralysis, and the writer, though still a student, but a medical graduate, was induced to lecture on chemistry all through the session, though listening to the other teachings. The position was very trying—quizzed in the presence of all the class, by all the professors, and then climbing into the rostrum to teach classmates—well, let him try it who thinks it was not embarrassing. But our trials were made lighter by the kindness

and good sense of Dr. Kendall. Though our superior in age as well as in dental attainments, he gave our efforts at instruction the most cordial attention, even though he had listened to Dr. Slack, and gave, many times practical hints which greatly aided us. The mere mention of his name has ever since thrilled us with good feeling. And now he is dead! The best specimen of physical manhood we ever met—a prodigy of strength and activity, but he is gone. We could fill an entire number of the *JOURNAL* with accounts of his manly deeds. And he was so unselfish. To save others, he boldly attacked a large grizzly bear in California, and subdued him with a club, till he could be caught with a lasso. His whole appearance suggested manliness; and appearances were not deceptive in this case. He was a native of New England, but came to Cincinnati in childhood. Of late years he practiced in Illinois—Bellevue, perhaps; and we are told that his death resulted from inflammation of the lungs.

“Green be the sod above thee,  
Friend of my better days;  
None knew thee but to love thee,  
None named thee but to praise.”

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#### AN INTERESTING SPECIMEN.

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At the late meeting of the Ohio State Society, our friend, Dr. D. R. Jennings, presented us a bristle from a toothbrush which had lodged in one of the salivary ducts of a small boy, till a portion of it became covered with a deposit of salivary calculus, of a clear white color, and about a line in thickness. The specimen entire looks like a small, unripe head of timothy, except that the color is different. Its obstruction of the duct caused trouble which led to its discovery and removal.

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A SAD illustration of the terrible plight which hereditary syphilis may be, is related by a physician of Manchester, England. A boy at ten years of age, a subject of this disease, was afflicted with an inflammation of the eyes that permanently impaired vision; later, with an inflammation of the throat that destroyed the soft palate; at eighteen the parts of the bones of the legs decayed and came away; at twenty the skull showed signs of dead bone on the right side of the forehead.

THERE has been more or less discussion lately concerning the cause of the bad, cowy flavor so often noticed in milk. One man thinks he "has had it fully demonstrated that the intense heat causes ferment of the excretory matter, and at the same time so expands the tissues that the flavors are so absorbed into the milk, giving a decided dung flavor." It seems to have been particularly noticeable during the hot weather of the past season, and was one of the bad things to contend against in some of the creameries and cheese factories. The probability is that the bad water is the chief if not the only cause of the trouble. Fresh running water became scarce everywhere, and cattle were often obliged to drink from standing pools to quench their thirst during the hot days.—*Clinical Brief*.

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LOCOMOTOR ATAXIA CURED BY NERVE-STRETCHING.—Dr. Langenbeck reports a case of tabes dorsalis cured by stretching the two sciatic and crural nerves. The stretching was done at different times, and was performed antiseptically. The ataxic symptoms began to disappear very rapidly.—*Medical Record*.

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DR. JOHN TOMES' paper, read before the International Medical Congress, on "The Study of Dental Surgery and the Means Thereto," has been published in pamphlet form. A reviewer in the *Edinburgh Medical Journal* gives it unqualified recommendation.

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## Books and Pamphlets.

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"Of making many books there is no end."

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AN AMERICAN SYSTEM OF DENTISTRY. In a series of treatises by various authors. Edited by Wilbur F. Litch, M. D., D. D. S. A work in process of preparation, and to make two very handsome octave volumes of about 1,000 pages each, fully illustrated.

THERE is room for such a work, and we shall await its arrival with interest. The editor is well known to the dental profession, and it is enough to say that the publishers are Henry C. Lea's, Son & Co.

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## Contributions.

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"A word fitly spoken is like apples of gold"—SOLOMON.

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### PHAGEDÆNA PERICEMENTI.

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BY G. V. BLACK, D. D. S., JACKSONVILLE, ILLINOIS.

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[Read before Illinois State Dental Society, May, 1882.]

(Continued from January Number.)

The PATHOLOGY of Phagedæna Pericementi is not yet well understood. It seems to be to the alveolar dental membrane what caries is to the bones. The membrane is destroyed cell by cell, fiber by fiber, as bone is destroyed particle by particle in the progress of caries. In simple and uncomplicated cases this is accomplished without any considerable inflammation. This destruction is often confined to a very limited space, and is inclined to follow the direction of the fibers of the membrane, hence the narrow, deep pockets pointing directly towards the apex of the root. Just what this process of destruction may be I do not know. I have not had the opportunity of making sufficient microscopic investigation of the tissues involved to form a definite conclusion. It seems evident that there is a certain degree of localized inflammation preceding the destructive pro-



cess; but in the simpler cases it is very slight and strictly limited.\* The most marked feature that I have discovered is the presence of a peculiar organism or fungous growth which always fills the pockets described. This fungus resembles *leptothrix buccalis* more nearly than anything else that I have seen, and I think has been confounded with it; yet it differs from it in many seemingly essential particulars. It is usually seen in long branched stems interlocked with each other, and when pressed down under a glass cover is generally disposed in long, tangled bundles reaching entirely across the field of the microscope. Mixed with this there are usually more or less pus globules; and if there be fields of sufficiently clear fluid, it is swarming with bacteria of the linked dumb-bell, cork-screw and ovoid varieties. In many cases the ends of the twigs pointing outward from the mycelium-like reticulum appear in rapid vibration, causing a peculiar whirl of the adjacent fluids, much like that produced by the cilia of the rotiferous animalcules. I see from the reports of the International Medical Congress that Dr. Arkövy, of Buda Pesth, has noticed this, and according to his report has made a considerable study of it. He says: "There constantly occurs a certain fungous formation, which I find in close connection with the wasting of the alveoli and gingival margin, as well as the subsequent loosening of the teeth; it is quite different from *leptothrix buccalis*, although it is in developmental relation with it." The Dr. relates some experiments in raising this peculiar fungus artificially, but is not yet ready to say to what species it belongs. Without his plates I am unable to say that I have seen precisely the same thing, but suppose that I have. Dr. Arkövy seems to think that the fungus stands in causative relation to the disease.

Dr. Joseph Islai, of the same place, has also studied this fungus, but without fixing the species.†

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\*Dr. Witzel says: "Should you ever chance to extract a tooth at the early stage of the disease, you will find the soft disorganization of the dental periosteum confined to the neck of the tooth. The remaining portions of it are velvet-like, and loosened, and present a brilliant vascular injection increasing toward the root, and associated with small nodules and lobular granulations. I have not yet examined these growths for nests of micrococci, but I have no doubt that they are to be found, not only in the granulations, but also in the infected medullary tissue of the interalveolar partition. In the pus which may be obtained from the affected alveoli by pressing the gum, we observe under the microscope a countless number of micrococci and bacteria, which doubtless find in the pockets of gum tissue the most favorable condition for their continuous development."

†Dr. Adolph Witzel, of Essen, Germany, describes the disease as "Infectious Alveolitis," and in addition to the fungus described by Drs. Arkövy, Islai and myself, describes a peculiar form of micrococci in the cancellated structure of the alveolar processes. He considers the disease to be

I am not prepared to assert positively that this fungus stands in a causative relation to the disease; but my observations have led me strongly in this direction, and the observations of the gentlemen above referred to, seem to strongly confirm this notion. Yet the disease may only afford favorable ground for this peculiar development. If the disease be purely parasitic, and many facts lead in this direction, we ought to be able to transplant it. I had hoped to be able to try this experiment before this meeting, but have not had the time and opportunity to carry out my design. Whether this fungus be a cause or a result of the disease, it plays a very important part in the pathological processes. I should rather expect a wound filled with maggots to heal than a pocket in the alveolus filled with this rapidly growing fungus.

The hard incrustations of lime salts found in these pockets are clearly a result of the disease; just as much so as the incrustations upon a bullet lodged in the flesh is a result of the irritation produced by its presence. It now seems probable that the presence of this fungus may have some influence in determining the characteristics of the calculary deposit.

Incrustations of salivary calculus are entirely independent of this disease; but may, and do, coexist with it. Phagedæna pericementi may exist in one part of the mouth, and inflammation from deposits of salivary calculus in another part; or this disease may be at work in the alveolar dental membrane about the same tooth or teeth, the gums of which are in a state of active inflammation from the presence of salivary calculus. Lastly, inflammation from salivary calculus may, and in fact does, exist in very many cases without the presence of this disease. A very large proportion of the cases presented for treatment are of this form, and yield readily after the removal of the calculus.

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primarily of the alveolar borders, but also speaks of the pockets described by myself. He says: "We have in fact to deal neither with an ulceration of the gum, nor with a primary inflammation of the periosteum, but with a molecular necrosis of the alveoli, or caries of the dental sockets, produced by septic irritation of the medulla of the bone." There is no doubt about the occurrence of this destruction of the alveoli. The question is, which is the original seat of the affection, the bone or the peridental membrane? It seems probable that these micrococci are in fact the active spores of the fungus which have penetrated the tissues and grow from that position; but that the pockets are required for the full development. Hence, when the pockets are destroyed, as by the extraction of the teeth, or otherwise, and the maturing of the fungus prevented, the disease is terminated. If this were not true, the disease of the bone might continue after extraction of the teeth. Similar results are accomplished by antiseptic treatment.

## TREATMENT.

Simple inflammation of the gums from deposition of calculus is easily managed, provided we can have the hearty co-operation of the patient. Remove it *a la* Riggs, or any other way, so you get it all off, and then keep it off. If the teeth are not too much loosened all will be well; but the calculus must be kept off or the inflammation will return. If phagedenic pericementitis be taken very early in its course, it is easily cured. I am persuaded that this disease makes its start very slowly; and if it be recognized before any considerable pockets are formed beside the teeth, a short time only will be required to eradicate the fungus and complete the cure. The means employed are the same as those recommended farther on for the graver cases.

In case of inflammation from calculus with concurrent phagedæna pericementi, the gums will also appear to get well, after the removal of the calculus. The inflammation will subside very markedly, turgescence will disappear, the gums will shrink around the teeth, and the patient will recognize a great improvement. But now an examination will reveal the fact that there is no closure of the pockets that were formed about the teeth; and no matter how well they are cared for by the patient, the serual calculus, if it existed at first, will return, will be redeposited, because the same process that caused it at first is still in operation. The pockets are slowly deepening, serum exudes, and its lime salts are deposited. By this mode of treatment, nothing short of the removal of the gum, alveolar process and all, until healthy periodontal membrane is reached, so that no pocket shall be left, will be successful without some form of medication calculated to destroy the fungus which always fills these pockets.

Our experience leads us to the conclusion that extensive cutting away of the soft parts is injudicious treatment. If there are necrosed margins of alveolar process, which is not often the case, these should certainly be removed; but the rule is that pockets should not be slit out, nor cut away, for the reason that it destroys all probability of a re-formation of the periodontal membrane and alveolar process. We say all probability, for we know full well that nature performs some wonderful feats, and we have seen some re-formations of the periodontal membrane under circumstances so adverse, that we stand ready to believe almost anything

as possible. Yet these seemingly impossible things are the exception, not the rule; and the rule is that when the soft parts are cut away from around the root of the tooth, the membrane will not be re-formed; therefore such cutting away is not advisable except as a last resort. I think I have performed this operation thoroughly and carefully, and speak advisedly when I say that very little re-formation can be expected. On the other hand, with the treatment proposed, I think I can safely say that in a large proportion of the cases the membrane will be re-formed. My results within the last year have given me courage to make this statement; two years ago I would not have made it, and last year I would not have felt safe in so doing. Do not, however, interpret me as saying the membrane will be re-formed in all cases. First, there must be a pocket in which the re-formation can take place. Second, the destruction of the membrane must not be of very long standing. In cases that have progressed very slowly, and the cementum has been long denuded, and incrustated with serumal calculus, and the patient is middle aged or past, we cannot expect any very great renewal of the membrane. But in young persons when the disease has been rapid and not very much serumal calculus exists, we can expect almost complete re-formation, provided the surrounding tissues be kept intact.

The first thing to be done when the disease presents itself, is to carefully remove all foreign substances from the necks of the teeth. If nothing can be found, of course there is nothing to remove; but unless the case be in its earlier stages, the rule is that there will be incrustations of serumal calculus. The removal of this is often very difficult and tedious, but everything depends upon freeing the teeth perfectly from it. The instruments and mode of doing this have been pretty fully discussed, and I need not repeat what has already been told time and again. I will only say, do not cut away the soft parts; do not injure the soft tissues, unless there is hypertrophy. In this case the abnormal growth should be removed.

It will not do to rest satisfied with a single operation. After the work of removal has been done as perfectly as possible, strict search should be made at each subsequent sitting for thin crusts that may have been left; and when you know that none have been left, strict search should be made at every visit of the patient for slight re-formations of these crusts; for it sometimes, indeed



quite often, will happen that they will re-form during the progress of the treatment. In making this search I take a very thin blade, not sharp, about a line or two lines in width, and having my patient in a favorable light, insert this under the free margin of the gum, and gently draw it away from the neck of the tooth and look for the crusts. In this way many a thin, hard crust will be discovered, that the most sensitive touch has failed to detect. This search must be made persistently and carefully every time the patient is in the chair, from first to last, and every crust found must be carefully removed with the least possible injury to the soft parts in process of repair.

If there should be teeth which are so loosened that restoration cannot reasonably be expected, they should be removed at once, unless there is special and important reason for their temporary retention.

I will now speak of the local medication. More recently my object in the application of local remedies for phagedæna pericementi has been the destruction of the fungous growth, and the stimulation of the adjacent tissues. In inflammation of the gums from calculus, we use astringent remedies, if local medication be thought necessary, but not in phagedæna pericementi. Here we need an alterative and stimulative action, not an astringent. The tissue is sluggish and comparatively inactive. I have therefore labored to obtain a remedy, or combination, that would possess sufficient antiseptic power to destroy the fungus growth and yet not destroy the adjacent tissues, but stimulate them to more energetic action.

For the first quality we have employed carbolic acid; for the second quality the essential oils. In this combination we have, essentially, a new remedy, possessed of distinctive properties. After much experiment I have settled upon about three parts of the crystals of carbolic acid (melted) to four of the oil, but have varied somewhat from these with the different oils. When mixed in about this proportion the ingredients seem to be profoundly modified. There is evidently a chemical combination, the nature of which is not yet quite clear to me, and I will not now try to explain its chemistry. This compound will not injure the most delicate mucous membrane though it will cause some smarting.

The formulæ I have used most are:

*Carbol Clove, No. 1.*

R									
Carbolic acid (crystals melted),	.	.	.	.	.	.	.	m.	90
Eugenic acid,	.	.	.	.	.	.	.	m.	120
M —									

*Gaultheria Compositus, No. 2.*

R									
Carbolic acid (crystals melted),	.	.	.	.	.	.	.	m.	90
Oleum Gaultheria,	.	.	.	.	.	.	.	m.	90
Oleum Sassafras,	.	.	.	.	.	.	.	m.	30
M —									

*Eucalyptus Compositus, No. 3.*

R									
Carbolic acid (crystals melted),	.	.	.	.	.	.	.	m.	90
Oleum Eucalyptus,	.	.	.	.	.	.	.	m.	90
Oleum Gaultheria,	.	.	.	.	.	.	.	m.	30
M —									

These formulæ will be sufficient to indicate the mode of preparing the remedy. It may be modified by substituting other essential oils; I have used the first more than the others, but latterly have used the second more. It seems to be as effective as the first, though its stimulant properties are not so great, and it is more agreeable to the majority of patients. The eucalyptus compound has some advantage of the others in its antiseptic properties, the oil being heavier, and having more consistence, is retained longer in the pockets, but is less agreeable to the patient; I apply these with Farrar's syringe. Having my syringe charged, I pass its point down beside the root of the tooth, and my assistant turns the screw enough to discharge sufficient fluid to completely fill the pocket. This is repeated about the different teeth until every pocket has been filled. There need be no fear of running it over on the mucous membrane, for all the harm that will come of it, will be a little smarting, which only lasts a few minutes, and a peculiar benumbing of the parts, which will pass off in an hour or two. My habit is to make this application twice a week until decided progress is made toward recovery, or until a fair trial has been had, say for three months. When the soft parts have recovered a full healthy

appearance, and the pockets yield neither pus nor fungus, and tissue re-formation seems to be going on, the treatment may be relaxed to once per week for a time, and then once in two weeks, and the case thus gradually left to itself.

This course of treatment is like the weeding of a foul garden. We may go over it with a hoe and destroy every noxious plant to-day, but next week there will be hundreds of young weeds springing up; and we must go over it again and destroy this new crop. We can destroy the growing plants with the hoe, but we cannot destroy the seeds that are in the ground; hence the process must be repeated, time after time, to secure final success. It is just so with our remedy in phagedæna pericementi. It will destroy the growing fungus but it will not destroy the spores; therefore a new crop will spring up. We have watched this very closely. Two days after a thorough application, not a vestige of the fungus can be found; but in about four days we will generally find an abundant crop of short mycelium, adhering to, or apparently growing out of, the young cells that are developing. Following this up we have found it to recur week after week, but finally it will yield, and the parts are rapidly, or it may be slowly, restored to health. In order to succeed, the application must be kept up so closely that no fungus shall mature, and form fresh spores.

The re-formation of the peridental membrane in these cases is a slow process. The tissues do not adhere to the root of the tooth, and the repair takes place like the healing of an incised wound, but it is more like the process of granulation; repair begins in the bottom of the pockets, and creeps up on the root of the tooth very slowly, little by little, until it is accomplished.

We have learned to persist in this treatment, and expect results. We have seen good results after three months of seeming failure of re-formation of the membrane. Finally it became evident that the repair was taking place, and it went steadily on, though slowly, and in one case progress was clearly apparent for full twelve months; and a membrane that was totally destroyed, almost the full length of the root of the tooth over one side, fully restored. In most cases, however, the membrane will not be fully restored; if the destruction be extensive, it will stop short of the original point of attachment. We still have cases of entire

failure of restoration. One case now on hand we have had under observation for two years. One tooth was so loose that it was necessary to wire it to the adjoining teeth. The case has appeared perfectly well for a long time, but there is no restoration of the lost parts. The patient is better satisfied to keep it as it is than to lose it, and I am glad to have the opportunity to observe it.

This is essentially the treatment I am employing most at the present time. In the past I have been the rounds of the different medicaments that seemed to me applicable. Of these, chloride of zinc has served me well in many cases. Especially is this remedy good in the beginning of the treatment of cases in which there has been much calculus, and consequent turgescence of the gums. Under its influence they shrink down about the teeth more readily perhaps than with any other remedy I have used. It is very well adapted to use in traumatic inflammation from tartar. Iodine, dissolved in iodide of potassium solution, has produced excellent results. Salicylic acid, dissolved in sulphuric ether (30 grs. to the ounce), applied with Farrar's syringe, is a good remedy. The ether evaporates rapidly, leaving the acid in the pockets in the form of fine crystals, to be slowly dissolved in the fluids. Iodiform may be used in the same way. Some care is necessary to prevent the crystals from blocking up the fine tube of the syringe. Sulphate of copper has also done fairly well, and others I could name.

We have not time in this paper to discuss special points in the treatment at any considerable length, but some things may be briefly mentioned. I think it will be found that teeth that have lost their pulps will be more difficult to manage than others. The periodontal membrane is not so likely to be re-formed, or it will not be so completely re-formed. In bad cases it will sometimes be found advisable to sacrifice such teeth for the general good of the denture. I have, however, seen one case, a central incisor root, which supported a pivot tooth, in which the membrane was destroyed for two-thirds of its length on its labial side, completely restored within two months.\*

The upper molars are sometimes attacked, especially upon

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\*I was surprised to see in a foot-note to Dr. Witzel's article, statements which indicate that teeth with dead pulps, the roots of which are well filled, do better than those with living pulps. Upon critically reviewing my cases I find that some teeth with dead pulps have done full as well as others with living pulps, but this has not been the rule.



their lingual sides, and the disease will advance far up on the palatine root. In several cases in which the entire palatine root was stripped of its membrane, I have excised this root and removed it, retaining the crown and buccal roots with excellent results. After excising the root the tooth may be treated as any other pulp case, and the pulp chamber and canals in the buccal roots filled. The root should be cut close to the crown of the tooth and all rough points made smooth.

Occasionally pockets will be found that refuse to heal; that is, the root, membrane will not be reformed. The pocket will remain a pocket. With this condition of things permanent health cannot be expected. When all hope of reformation of the membrane is given up, it is best to cut away the soft parts so as to expose the root and thus destroy the pocket. It will be better that the root be exposed than covered by the gums without a periodental membrane.

Patients who do not think enough of their own welfare to go to the necessary trouble to follow up the treatment, should be discharged as soon as this fact is ascertained. The operator will lose reputation without benefitting his patient. Of course the patient should be informed that the treatment will be tedious, and that he or she must do their part of the work if they wish for success. We have found that most persons, when they understand the situation and that success may be reasonably expected, will give it fair attention.

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## OXYGENATED WATER.

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(PEROXYDE OF HYDROGEN.)

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[Translated from the French by A. W. HARLAN, D. D. S., Professor of Dental Surgery, College of Physicians and Surgeons, Chicago.]

THE action of oxygenated water, as an antiseptic, is to be, it seems, one of the questions of the day.

During one of the last sittings of the Academy of Sciences, (Paris) Paul Bert and P. Reynard, presented a paper on the action

of this liquid on organic matters and the ferments. But the first researches of these *savants* on the reciprocal influence of oxygenated water on ferments and living substances, dates from 1880. They established that all fermentation due to a typical ferment is immediately and definitely arrested by oxygenated water.

The ferment is destroyed, and even after the elimination of the oxygenated water, by a substance which decomposes it the most rapidly, fermentation ceases entirely. The yeast of beer, all microscopical vegetation, vibriones, acetic fermentations and putrefactions, are immediately annihilated by the presence of a few drops of oxygenated water. All substances which do not decompose oxygenated water may be preserved indefinitely by it; those which, on the contrary, destroy it, begin to putrefy as soon as it disappears.

But if the typical ferments are annihilated by peroxide of hydrogen, the soluble ferments, such as saliva, diastase, gastric, and pancreatic juices, seem not to be affected by it, and continue to act in its presence. The authors have not limited their studies to ferments, they have investigated the influence of peroxyde of hydrogen upon different animal and vegetable matters, and the latter is not the least interesting of their experiences. We will content ourselves, at this time, by reproducing the resumé of the properties of oxygenated water, in order to arrive at the practical bearing which may result from these discoveries :

1. Oxygenated water, very much diluted, arrests fermentation due to the development of living organisms, and the putrefaction of all substances which do not decompose it.

2. It acts in no wise on amorphous ferments.

3. Oxygenated water, diluted, is not decomposed by fats, starch, soluble ferments, albumen of eggs, caseine, peptones, creatin, creatinine, or urea.

4. It is rapidly decomposed by azotized collagenous matters, by musclic, the fibrin of the blood, and diverse azotized vegetable matters.

5. This action is definitely arrested by a temperature above 70° (centigrade). Putrefaction, on the contrary, leaves it absolutely intact.

MM. Paul Bert and Reynard, give out the idea that this substance can be employed in surgery, and that it may have some value as a parasiticide. Events are likely to confirm their supposi-

tion. MM. Drs. P'ean and Baldy, have made, at the hospital St. Louis, numerous trials, in order to determine the advantages that may be expected to follow the use of oxygenated water in surgery. They employed the peroxyde of hydrogen, absolutely neutral, a point extremely important, for if this water is acid, it decomposes easily, and does not produce the effect that one has a right to expect, and even gives birth to vapors of hypoazotique acid extremely irritating. In most cases the peroxyde contained from two to twelve times its volume of oxygen. It was applied at first on the exterior, for the dressing of wounds and ulcerations, then given internally for certain maladies, such as anæmia, septicæmia, diabetes, tuberculosis, and more particularly to those tuberculous subjects operated upon. The effects were most satisfactory. They were favorable, not alone for minor operations, and small resections which are practiced daily in service as important as that of M. P'ean at the hospital St. Louis, but even for major amputations. Pending the duration of the dressings, the atmosphere of the ward was purified by the evaporation of the oxygenated water. One is authorized to predict that peroxide of hydrogen is destined to dethrone Phenic (carbolic) acid, so long in use as an antiseptic. We do not doubt that these facts brought to the acquaintance of our readers, may engage distinguished practitioners, who are interested in scientific discoveries, to attempt the employment of this new remedy in dental therapeutics. Dr. Domoschino has already used it with success.

Our article was already in press when we received the following communication which proves that oxygenated water has already been used in dentistry:

The July number of the *Journal de Pharmacie et chimie* contains two articles relative to the employment and properties of peroxide of which we borrow the one that follows as being more interesting to dentists: Dr. Eball, speaking before the society of engineers, of Hanover, of the application and use of peroxide of hydrogen, in the bleaching of feathers, hair, bone, ivory, etc., said that he knew a dentist who used it for the bleaching of teeth, three parts of oxygenated water to ten parts water. The mode of using it is not described, but the success resulted, most likely, from two causes: After the decay was removed perfectly, the tooth was first treated with appropriate liquids (ether, etc.); second, a feeble solution of carbonate of ammonia was used,

(which might be replaced by carbonate of soda or potash) and afterwards the oxygenated water (non-acid) previously neutralized with ammonia.—*Dr. A. Aubean, in L'Odontologie for Aug. 1882.*

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## A PLEA FOR RUBBER.

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BY DR. J. W. ESSIG.

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IN looking over our dental journals we seldom find a good word written as regards one of the most useful articles needed in the practice of dentistry. Instead of praise of so useful an agent in mechanical dentistry, we generally see it spoken of as that *cheap stuff*, unfit to be used as a base for artificial dentures, and only fit for “Cheap Johns” and the bunglers of the profession to use. They lay the present decrease of dental prices to that abomination, *Rubber*. Yet they do not remember the many dollars that found their way to their pockets through its use, and that still come to them by its use. They condemn it because “Cheap Johns” use it. They say it is so easy to work that the novice can become proficient in its use in from three to six months. Yes, I grant all this. If the novice amounts to anything I think he could become pretty well used to working it in as many days. That is, I mean, he could be able to watch the vulcanizer and pack a flask, etc., very well. But do my brothers, who are down on rubber (on paper), mean the entire construction of an artificial denture, from the delicate manipulation necessary for an accurate impression to the final polishing process of the plate? If it is meant by my brothers, that a novice can learn to do this, in a proficient manner, in six months, I will simply say I have learned by experience, it can't be done. A *thorough knowledge* of the manipulation of an artificial denture that is worthy of the name, can not be obtained in that many *years*. A dentist (so-called) can plaster a few sections of teeth together, and boil them, and call them artificial teeth. But do my brothers consider them so. *No!* A thousand times no! It matters not on what kind of a base teeth are placed, if they are natural in appearance, easy for the patient to wear, and the patient is able to use them for the purpose of mastication. It matters not, as I said before, whether the teeth are placed on gold, platinum, continuous gum, or rubber.



If they answer the purpose for which they were made, that is enough. Now the question is, do the majority of dentures fully answer the purpose for which they were made? I unhesitatingly answer no! Why? Is it lack of skill? Possibly. Is it carelessness? It may be. Is it because "Cheap Johns" make *things* on rubber and sell them for \$6 a thing?

Why is it that good dentists denounce rubber as entirely unfit for an artificial denture?

I will tell you. They have so long had an idea that rubber was a *cheap* base, and, of course, they must make the denture to correspond with the base, and that they must do this to save themselves from loss, because "Cheap John" makes them for \$6.

My dear brothers, you will waken up by and by, and find that you have been running down the profession's best friend to mechanical dentistry. The rubber base for artificial dentures will never go out of date, at least not until another base can be found that will compete with it in cheapness and durability. Why? Because the mass of the people cannot afford the more expensive bases.

Now, because rubber is so cheap, and so easy of manipulation, need we insert an artificial denture that we have taken pains with, for \$6, because A or B sees fit to do so? *No*. You say they will take our custom away from us if we do not. They will as certain as day succeeds night, if you do not stir yourselves to prevent them. You ask: "How can I?" Let me tell you the way it must be done, and it is the only way. You build an artificial denture on gold or continuous gum, and you are proud of it. Why? Because it shows (if it is well done) artistic as well as mechanical skill. Your patient comes and, of course, is pleased with the denture. They are natural and nicely fitted to the mouth. You have done your best to make them nice, because, you say, "I get well paid for it." And you say to yourself, "how much nicer that is than that cheap stuff, 'rubber.'" Your customer pays you fifty or one hundred dollars for your work, and you feel well. You are ready to condemn rubber, that you get half, or probably less than for your other work.

Now, Doctor, look over your last year's work and see how many sets of teeth you have made on gold or continuous gum, and how many on rubber. You say, "why, I make ten to one on rubber."

Just so! You have sent out one set of teeth, and ten *things*. Don't get angry, Doctor, until I reason with you and show you that I have told the truth. You acknowledge you do not take as much pains with your rubber work. You say you cannot save yourself and compete in prices with A. or B. Are you compelled to make a set of teeth for the same price A. or B. does? Not necessarily so. Then why can't you take just as much pains in selecting, arranging, and fitting a denture of rubber as you would one of gold, and charge accordingly? You say a set of teeth on rubber, no matter how well it is made, is known as a rubber set anyway, and you can't make people believe they are any better than A's or B's teeth that can be had for \$6.

Now, Doctor, do you really believe that? If you do, I must conclude that your experience is very limited. Now in the short time the writer has practiced, he has found the majority of the people that he has come in contact with far from being fools. Perhaps they are not connoisseurs, as far as an artificial denture is concerned. But when they see a good article, and get an explanation of the difference between a poor and a good article, they generally are able to see the difference, and that very quickly. Mrs. A. comes to me and wishes a set of teeth on rubber. I state my prices, if they are asked. She exclaims in a breath, "Oh! Mrs. B. went to —, and had a *beautiful* set made for —, and, of course, you ought to make mine for that." Instead of getting angry and losing a customer, by telling Mrs. A. to go and patronize Mrs. B's dentist, or, after stating my prices, reduce them a little to obtain her patronage, I do neither. But I patiently explain to her the difference, and this is very easily done. If Mrs. A. has confidence in me that I am telling her the truth, she tells me to go ahead.

I go to work, obtain just as accurate an impression as if I were going to use gold or continuous gum for the base. I take just as good a cast as possible, select the teeth suitable to her *age* and complexion, etc. If she has any natural teeth in the mouth, so much the better; I select teeth that will match these. Sometimes it is very difficult to match certain kinds of teeth, but with a good stock to select from, a good selection can be made. Very often the patients wish to select their own teeth. I good naturedly let them do it. They rarely, however, select the right tooth. They are averse to having any like their old, especially if the

natural ones were large or rather dark. They almost invariably select a tooth that is entirely different from their own. I kindly tell them of their mistake and why it is so. I tell them that this is *my* business—that I have spent years in its study,—and that it requires an adept to do it aright. I find teeth to suit me, and go to work and make my model plate, and adapt the teeth to it, not in a hurried manner, but with as much care and skill as I would in adapting them for gold. I then try them in the patient's mouth, and, if needed (which rarely happens) correct any little defect in the articulation, or anything that would tend to mar the adaptation of the denture. I then make my model plate with as much care as my patience and skill will allow. I then use the BEST rubber, and vulcanize the case. This operation requires just as much care and skill as the preceding ones. When my case is taken out of the vulcanizer, it is with the consciousness that my work will give good satisfaction. The finishing process is rapidly done by assistants, under my personal supervision, however; and having used the best rubber I make my plate as thin as I can, taking care, however, that in the weak places there is sufficient strength to resist the strain of mastication. My plate is then inserted, and my patient delighted at the start, and is certain she can soon get used to them. She pays me my bill without a murmur, which, of course, is considerably larger than Mrs. B's dentist would have charged her; but she is satisfied, and she feels as if she has got her money's worth, and I feel likewise. She compares notes with Mrs. B., and the comparison is so plainly in my favor, that both Mrs. A. and B. are my friends and well wishers.

Now, gentlemen, I claim that there can be *just as much skill* and *science* used in making an artificial denture on the rubber base as there is used in working with gold. You may not all agree with me, but I believe that just as artistic an artificial denture can be made on the rubber base as on the gold. There is great room for improvement on teeth manufactured and for sale at our dental depots, as well as in other articles used by the profession. We all know our profession to be still in its infancy. The most of us, however, never expect to reach perfection, at least I do not. But I'll tell you what I intend to do; I intend to come as near the goal of perfection as I *can*; and if after my work is finished, I see that I was far, *far* away from the goal I was striving for, I



will have the satisfaction of knowing that I did my *best*, and that many of my fellow-beings were benefitted by my labors.

There is work to be done, gentlemen. There are improvements to make every day and hour. Every piece of work we can improve on, and we should do so.

But I beg of you, gentlemen, whatever you do, do not give up that blessing for the poorer classes—rubber—to the “Cheap Johns” of our cities; use other bases all you can, if your patients prefer, and are able to pay, but reserve this cheaper base for your poorer customers, and let your skill be shown equally with the rubber and gold. It lies with you to raise it to its proper standard, or by your carelessness and neglect, you will cause it to fall entirely into the hands of bunglers, who in their haste to collect the almighty dollar, will cause it to disgrace that part of the profession known as *mechanical dentistry*. When you cease denouncing it, and use it as it ought to be used, you will have the satisfaction of seeing it again taking the lead of the cheaper bases, which will be a godsend to the thousands who cannot afford, not a better, but a more costly base.

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## PLASTER OF PARIS vs. MODELING COMPOSITION.

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BY DR. STEWART J. SPENCE.

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In the JOURNAL of November last Dr. U. Smith had an article “About Impressions,” condemning plaster and recommending Modeling Composition No. 1. His claim is, that the composition, by compressing the softer tissues of the mouth, provides for a plate which will do similarly, and therefore be more permanently useful.

That provision should be made for this compression of the soft parts by a plate, is of the greatest importance. Harris recognizes it, and recommends, if I recollect right, brushing thin plaster over the impression at the parts corresponding to the soft parts of the mouth.

Richardson dwells upon the subject, and points out that “the tenacity with which a plate adheres, on the application of direct traction, cannot always be relied upon, inasmuch as a well fitting



plate will sometimes be readily dislodged in this manner, while, on the contrary, one but illy adapted to the parts, may require considerable force to separate it from the jaw, when acted on in the same way. The most trustworthy test of actual, or practical stability, is firm pressure, applied alternately over the ridge on each side, and in front."—*Mechanical Dentistry*, p 252.

Several other writers enforce the subject, some recommending treating the impression with a coating of varnish at the soft parts, or a few layers of tin foil, and others trimming down the model with a knife.

Harris says: "A vulcanite plate is larger than the mouth by the expansion of the model. Here, the contraction of gutta percha will prove a very valuable compensation, *also the compression of tissue, made by the pressure of wax.*"—*Principles and Practice of Dentistry*, p 548.

I dwell on this subject because of its importance, and I am glad to see it brought forward by Dr. Smith; but I must disagree with him as to the excellency of the Godiva Modeling Composition, and for these reasons: *It is elastic and pliable.* Though very pleasant to use, clean, and easy of application, it is treacherous. While it is very accommodating in taking the faintest depressions so as to delude the eye of the operator, it will bend out of shape in a wholesale manner. While wax, which has little elasticity, will, in being removed from a tooth, drag just at the tooth, locally, so to speak, the composition will drag not so much just *at* the tooth as around it, and that for some distance. I have noticed it thus dragged by a tooth away from the tray in lower impressions, thus throwing up that whole side of the impression. Nor is that all, but its elasticity develops itself in another feature, which is, that it has a tendency not to remain where placed. This is most troublesome at the buccal and labial surfaces of the upper jaw, where it becomes necessary to hold the material pressed until quite hard, or it will shrink away. This may be demonstrated by pressing a plaster model into a tray full of the Godiva, when it will be seen that the composition which is above the rim of the tray will shrink from the plaster, *and when pressed up against it will shrink away again as soon as the pressure is removed.* I am not prepared to deny that the pressure of the lips and cheeks may, in *some* cases, more or less counteract this shrinking away, but in others it seems to increase it.

Again, its specific gravity being considerable, and its resistance very slight, it bends from its own weight, when used very warm and soft, thus coming away from the parts where it may have been pressed, and possibly from the posterior portion of the plate, though I am not able to speak positively as to this. A sufficient excess of the material may prevent it falling from the surfaces which are to be covered by the plate; and unless used *too* soft, I think it is not liable to occur. The same objection applies to the plaster if used too soft.

This pliability would not be an objection with the inferior ridge, and might be of some benefit. But when used very soft, it is deprived of the quality for which Dr. Smith recommends it, namely: compression of soft tissue; and the doctor seems to have overlooked the fact that plaster, when used stiff, will do this very thing.

Not condemning this nice material *in toto*, I desire to only indicate its faults, so that those using it may be on their guard; and I would recommend constant digital compression where needed, high flanges to trays, its use when not too warm and soft, and replacing the impression in the mouth after removing and immersing it in cold water.

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## NATURAL ABILITIES AND MENTAL ATTAINMENTS REQUISITE TO THE STUDY AND PRACTICE OF DENTISTRY.

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BY DR. MORRELL A. WEBB, MARENGO, ILL.

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FOR a man to engage in any occupation, or profession with profit to himself and patrons, he must possess some knowledge of his own natural tendencies, also of his abilities in the direction of the field of labor upon which he expects to enter, and his physical abilities should be taken into account as well.

I wish to present a few thoughts in relation to what is necessary to know about one's self before entering upon the study and practice of dentistry. For a man to possess himself of the required knowledge relating to himself, he must study the works of God in all their different departments, and, for convenience, I

shall separate the necessary field of attainment into some of the most important branches :

1. A man must believe in God ; he must have a saving knowledge of him, and in so doing he will live an unselfish life, working for the cause of the great truths, not looking for reward so much in this life as in the next ; and in so doing he will lead a life of honesty, and have the implicit confidence of those for whom he may labor. He will possess a consciousness that he has done his best for his patients, and thus be much surer of living a long life here, and being able to enter into the glorious life beyond.

2. The dentist must have a thorough education, and thus be able to understand the duties he may be called upon to perform ; to understand the causes of the diseases he may treat ; to know the composition and origin of the metals and materials which he daily manipulates, and the composition of the medicinal preparations that he administers. And to become acquainted with these things it is necessary for him to study the following sciences :

1. Astronomy, because it teaches him from whence comes the light that so beautifies our world, the size and magnitude of the body which supplies us with heat from its everlasting fires, and, too, that he may become acquainted with those laws which are so wonderfully and perfectly kept, that the movements of the planets do not vary a hair's breadth in a million years, and that he may realize that the laws that govern the construction and destiny of his own body, are no less wonderful and perfect, and that, did man obey the laws of his being, there would be no need of the profession of dentistry.

2. He must acquaint himself with geology, as it teaches him the formation of the earth, of what it is composed, that it holds in its bosom the metals and substances which he is daily using ; and that a few of its elements enter into a combination which forms so natural a substitute for the teeth, porcelain, and also that he may be able to present to his mind a clear idea of the composition and appearances of the different periods in the earth's formation, that he may know from whence comes that fuel which enables us to turn nature's darkness into day, and at the same time to drive away the chill winter blast from our hearthstones.

3. He must study chemistry for the purpose of understanding those laws which govern, and the properties of those substances



used in the operating room, and laboratory; and the forces necessary to change their forms and nature. He will learn the composition of air, water, metals, vegetable and animal substance, and all other material forms connected with the earth. He will understand the laws which govern the action of metals as used by him; and, in fact, a thorough knowledge of chemistry is very essential to a proper consideration and investigation of the Science of Dentistry.

4. He must acquaint himself with physiology that he may know the action and uses of the organs and parts of the human body, more especially, that he may see the relation one organ bears to another; that he may see how the improper working of one may lead to the disorder of another; how we are made to realize that a part of the organism is below its normal standard of action; how those white glistening fibers, although microscopical in size, act as the telegraph wires to warn us of approaching danger from external sources, or internal disease; and he will thus learn of the formation and development of the different organs of the body.

5. The dentist must study the science of philosophy to become posted in the laws of natural forces, and of mechanics, in the kinds of electricity and its generation and magnetism as they are connected with natural forces, and with the relation which they hold to man and especially to the dentist.

6. Anatomy next requires thorough mastery to be able to understand the construction and development of the organs of the body, that he may know of what substances the teeth are composed, how they may be altered in density or appearance, what muscles of the head and face act in the process of mastication, at what age the teeth are severally erupted, how they are connected one with the other by nerves and blood vessels, and thence with the general organism, and how, and where they are situated in their relation to the face. In fact, a thorough course in anatomy is desired.

7. The dentist should be posted in matters relating to history that he may converse with intelligence about past events, either as relating to his own calling, or matters generally, that he may see the profit of thorough study and investigation, by the great changes that have taken place in theories and beliefs which once held sway among the most intelligent. He will, by the



study of the history of the science of dentistry, perceive how great changes have been wrought in the methods and modes of practice, and be stimulated to continue the good work of separating the dross from the pure, and placing present theory either on a broad foundation of facts, or else burying it deep from sight forever.

8. The dentist should be literary in his tastes, that he may study the thoughts, and profit by the expressions of the same, of the best minds of the age, and of ancient times. He should love poetry because he will thus learn of the beauties of nature, at the same time he enjoys the beauties of language, and because his soul will be elevated to nobler and greater deeds, looking towards the elevation of his less favored brethren. By reading subjects relating to his calling, as expressed by the most intelligent minds in its ranks, he will be better able to give his mite of information to help swell the tide of knowledge that bears the profession onward to still greater perfection.

And there are other and numerous branches of knowledge that require study and research. And all taken together help the man who contemplates the practice of dentistry, to better understand himself.

A man, to be a really great man in this profession, must possess genius; he must have the eye of the mechanic, the perceptive faculties of the artist, and the greatest steadiness of hand and strength of muscle.

He must have the eye of the mechanic, to see beforehand the completed operation whatever it may be, and the laws necessary to obey to make it successful, how to shape the cavity, how to leave the margins, how hard to bring pressure to bear upon the walls of the cavity, how to work in unison with the laws governing the metals or substances which he uses in filling a tooth.

He must have the perception of the artist to see his work clearly in the mind, that he may know where and how each and every movement of the instrument tends to the completion of his filling to the beautiful and original contour of the tooth, avoiding a disobedience of the law, of course, which says "that a thing is only as strong as its weakest part," thus avoiding building a filling out of proportion to the support of its foundations, thereby avoiding (as is often the case) the breaking away of the walls and ruination of the work.

The dentist must be well stocked with nervous power, that he can stand a continued strain, with but little fatigue; and he must be possessed of the recuperative powers necessary to return his exhausted energies to their normal standard. The nervous strain that the dentist undergoes is a fruitful cause of the breaking down of the physical powers, not only because he has to stand with steadiness and use his instruments with the greatest precision, but because he does not have the rest needed to regain that strength already lost, thus differing from the average physician who is seldom called upon to perform more than one surgical operation a day, and that usually of short duration, thus avoiding that continual strain which the dentist necessarily bears.

I have given only a synopsis, as it were, of those studies and natural abilities requisite to the greatest good in the man, and the dentist; and that the more we know of the facts and principles of the world, and, in fact, those which underlie the working of this mighty fabric of the universe, and the more we know of those thoughts advanced by the intelligence of man (enlightened by research and investigation,) regarding cause and effect, and the nearer we get to the truth of the object of our being, and the great love manifested towards us by the Creator, the nearer we come to a perfect self knowledge, and the greater, better, and more perfect will be the works of our lives, and those with whom we associate will be the better for our living, and in the end it can be said of each of us: "Well done, good and faithful servant."

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## GOLD vs. AMALGAM.

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BY DR. U. SMITH.

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OPERATIVE dentistry is now divided into two factions, "Conservative" and "New Departure," each party in every journal, convention, association, and by private office intercourse is putting forth its respective merits. These agitations have now been continued a length of time until the innocent public are, to a great extent converts to one or the other theory. The Conservative faction maintain that gold is the only *par excellence* material for a safe and permanent preserver of carious teeth; while the other

faction as tenaciously maintain that plastic materials, especially tin and silver alloys, rival gold as a universal filling. Able practitioners, of long experience, arrive at different conclusions. So it has been and ever will be in every department of science. Each mind is a world unto itself; therefore, it generates theories peculiar to its own reasoning, and molds a corresponding manifestation. With the same means at command, one person, with a reputation for common sense and years of practice, becomes only a medium mechanic, while another, in the same situation, surprises the world with his productions. One surgeon will declare, upon honest convictions, that the operation cannot be performed without destroying the patient's life, while another, of less experience but better judgment, declares to the contrary, and is successful. Napoleon's campaigns, under his supervision, were successful, when, if guided by one of his selected marshals, would have been disastrous. A. T. Stewart, alone in his office, planned and guided to successful consummation, commercial enterprises over combined competitors. A hundred commercial geniuses united were beneath his level.

After these desultory observations let us consider the respective merits of the two factions that stand arrayed as opposing forces in the science of preserving the natural teeth.

First—Is not gold the purest and most ductile of all the known metals? Most assuredly. How do we know this? Because its resistance to oxidation is greater; in fact, acids that soon oxidize silver, or silver and mercury combined, are not perceptible when applied to gold. Are not oxides of many metals poisons? Most assuredly. Then being poisons, are they not deleterious to the secretions; deadly destructive to vitality of osseous tissue? Assuredly. This being the case, should they not be avoided, if not altogether, as much as possible? It seems to me that an affirmative answer would be correct; but the New Departure fraternity assert that amalgam preserves teeth when all other fillings, especially gold, fail, and therefore lose sight of everything else. They have tried both, therefore they know all about it. People are carrying tons of amalgam in their teeth and still live. That settles it. They further argue that gold fillings, solidified as much as the mallet and condensers will admit, and polished to mirror brightness, soon leak, decay sets in, fillings loosen, drop out,—patient returns within a year after the operation, with a lump of

gold, saying, "Doctor, that fine filling has come out ; here it is ;" find tooth very much decayed,—excavate anew, fill with amalgam ; no more leakage, stays well five or ten years. This proves that gold fillings, however well compacted, are "trash." Then the New Departure cock flaps his wings and crows long and loud, until the whole country hears him, from Maine to Georgia. Now, why did his gold filling leak ? for assuredly he condensed it enough. Was it packed closely against the walls of the cavity ? Apparently it was, though in reality it was *not*, for if it had been well packed against the cavity walls throughout, no leakage could be possible. "Aye," says the apostle of New Departure, "that is the very difficulty,—so rarely can it be done." Well, let us see : You have made, say two or more retaining cuts in your cavity, forced your gold into these undercuts, then continued filling with condenser of the usual size, until the cavity is filled and contoured, and as much as the occasion requires. The filling, though very *nice*, is a failure, merely because you have used condensers three times too large ; therefore the filling is diverted, in each layer, to the center,—in fact balled up. It does not hug the sides of the cavity only in places, consequently moisture works in, caries goes on, and shortly the *splendid* gold plug drops out. I know how it is from experience. My fillings have dropped out lots of times, to my chagrin, and to the annoyance of my patients. I did not abandon gold, but looked for the cause of failure. After ascertaining the cause, I set out on a new departure principle ; that is, I threw aside the coarse condensers usually advertised, substituted them with fine points such as are generally used for root fillings, bent them into the required shapes, took gold foil, Nos. 4 and 5, cut each leaf into three or four slips, rolled each slip loosely, then cut them into pieces of different sizes ; after heating them to redness, I condense one piece in place, holding it there firmly, adding on piece after piece, closely condensing against the sides of cavity, which only fine points can do, then when sufficient gold is in place, condense as usual, pressing firmly one side with one hand, while malleting the other, this secures against any possible vibration. The hand mallet is generally preferable to the automatic, especially for frail teeth.

My experience convinces me that this system, if well followed, will be effectual against leakage, or danger of fillings giving way. Screws are great auxiliaries where there is a lack



of base, or want of support. Dentists should avoid cutting away healthy dentine, and use screws in lieu thereof. For my part I am disgusted with this New Departure literature. I hope the genius of Conservative dentistry will choke it out, as tares from among wheat. Plastic fillings are useful, in fact indispensable auxiliaries; but to give them precedence over gold, is to declare the moon's cold magnetic rays more conducive to health and vigor than the warm electric rays of the sun.

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## HAVING EYES, YET SEE NOT.

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BY DR. J. W. CORNELIUS, MADISON, WISCONSIN.

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"Knowledge dwells  
In heads replete with thoughts of other men;  
Wisdom in minds attentive to their own."—COWPER.

It has been with truth said that some big clock governs the mass around it; as it clicks, so they click; as it points the hour, the minute, the second, so do they. If the big clocks were always true to time, and all alike, there would be some sense and comfort in being governed by them. As it is, it would be well for us to look a little to our own time-pieces, exercise our own judgements, and learn to think and act for ourselves. It is all right to keep up with the procession, as Bill Nye would say, but we should avoid abruptness so far as possible. The momentum acquired by some, not very old by experience in the profession, is truly alarming to an older practitioner.

A few days ago, in one of our journals, we came across the following glittering brain-flashes from Michigan:

"Amalgam is a condemned practice; and its use for filling teeth is forbidden by *every* Dental College in Europe and America; and any dentist who uses it to fill good teeth renders himself liable to prosecution for mal-practice.

"It often produces mercurial sore mouth, causing the teeth to drop out. Every amalgam dentist is either a knave or a fool."

From such wise men, oh, Lord! deliver us. In a twenty years' practice, and an extensive acquaintance with many of the best men of the profession, we have never seen or heard of teeth dropping out, caused by amalgam fillings; and we should like to

see the honest dentist who has. We are not an advocate of the indiscriminate use of amalgams; but we must confess to have seen hundreds of teeth saved to usefulness by being properly filled with this terrible material. Every other practitioner of years' standing must say the same.

Attribute mercurial sore mouths, swelled glands, etc., to their true source, a diseased syphilitic body, and you will be nearer the truth.

[Mercurial pytalism and syphilitic disease are not much alike. Mercurial poisonings from amalgam fillings are not common; but we have seen such cases.—ED. JOURNAL.]

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## AN IDEA ON AMALGAMS.

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BY L. D. CAULK, D. D. S., CAMDEN, DELAWARE.

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ONE great objection to amalgams is that they shrink and turn black, consequently stain, disfigure and even destroy the organs that you are trying to beautify and preserve. That heat expands metallic substances is a fact well known to the most casual observer, the expansion being a rupture, a breaking apart of the crystals of which it is composed,—this being nothing more or less than the annealing process of all metals; but if this process goes in a *vacuum*, and by annealing and re-annealing, and subsequent melting, you have then a product that does not undergo such changes.

Annealing of metals in *free air* tends to soften them, for the reason that has been given, *i. e.*, cracking; whereas this new method of annealing produces an opposite effect, making metals harder, more ductile, and what is of greater importance, their density is entirely changed. Then by amalgamating with pure mercury (just so much and no more) you should have but little or no shrinkage, and no oxydation whatever. Now when this amalgamation takes place, more or less heat is evolved, but if this heat is allowed to depart before inserting the material in the cavity, it will *not shrink*, because crystallization at *low temperatures* is not a process of contraction. This is easily proven in observing the

crystallization of water, "freezing," and the consequent bulging or bursting of pipes or vessels in which it is contained. Hence, the laws which govern all substances in passing from a fluid, or a semi-fluid, to a solid state, and the laws that control these substances during the process of crystallization, should be thoroughly understood by all operators. So, upon the proper choice of materials, and intelligent manipulation of them, depends the success or failure of a *plastic* for filling and preserving teeth. And without this knowledge, and the action and numerous changes these substances undergo during the various processes of manipulation, your labor and time is lost.

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### DEATH OF DR. WM. H. ALLEN.

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At a meeting of the First District Dental Society of the State of New York, held November 7th, 1882, on motion of Dr. Frank M. Odell, a committee of three was appointed to draft suitable resolutions in relation the death of William H. Allen.

In pursuance of this purpose we present the following :

WHEREAS, in the dispensation of a wise Providence, we are called upon to mourn the loss of one of our most estimable members, it is therefore

*Resolved*, That in the demise of our beloved brother, William H. Allen, we have sustained an irreparable loss; and that we deeply sympathize in this visitation, with his widow and relations.

And further, that a memorial page be set apart in the book of records of this Society, and that copies of the same, and of these resolutions, be sent the journals for publication, and to his family.

FRANK M. ODELL,  
WILLIAM H. ATKINSON, } Committee.  
W. T. LA ROCHE.

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### In Memoriam:

William H. Allen, who departed this life on Monday, October 23d, 1882, at the age of sixty-two, was one of the remarkable and representative men of the age.

By his father, Samuel Allen, a well-known mechanic, inventor, and civil engineer of eastern Massachusetts, he was descended from the renowned Gen. Ethan Allen, of Revolutionary fame.

His grandmother was sister of President Maxcy, of Brown University.

Commencing with an ordinary common school education, he, in 1838, pursued an academic course of one year at Norwich, Conn. In the autumn of 1839 he commenced the study of the profession of dentistry with his elder brother and associate, then constituting the firm of Hawes & Allen, at Park Place, New York.

Drs. Hawes and Allen were leading men in the profession; the latter, Dr. Chas. C. Allen, being for many years editor of the first dental journal established in this State, *The Dental Recorder*.

After completing his course of study with Hawes & Allen, the subject of this sketch settled in Norwich, Conn., and enjoyed a large and successful practice for seventeen years.

On account of ill-health he spent the winter of 1849-50 in the Southern States, returning in the spring; but in 1851, for similar reasons, he sailed for Buenos Ayres, and after narrowly escaping death by shipwreck arrived at Monte Video, February 4th, 1852, the same day that Rosas was deposed.

Exhibiting his diploma from the Society of Dental Surgeons of the State of New York, to the Medical Junta, he was allowed to practice without the usual examination and fee.

He remained at Monte Video during the year practicing in his profession, and then with renewed health he returned to Norwich, Conn., where he remained until 1856, when at the solicitation of his brother he came to New York; as the event proved, to succeed him in business; Dr. Chas. C. Allen dying in 1857.

William H. Allen was one of the incorporators of the New York College of Dentistry; a trustee of that institution, and at the time of his death and for several years previously, President of the Board.

He delivered the first clinical lecture in that institution, and has ever since been an active member of the Clinical Board.

He was ever one of the first to adopt and adapt new ideas and appliances as they arose and could be made serviceable; and



many years ago acquired a reputation in the restoration of broken down and worn teeth to their normal length and contour by building with gold. This operation is now quite common; but twenty-four years ago, when he performed successfully the most extensive operations of the kind which had yet been attempted, restoring almost entire arches of dental organs to usefulness, dentists of the first standing would not believe the reports of cases submitted by him; and in one instance a deputation was appointed to call upon one of his patients and ascertain whether he told the truth.

The report was like that made by the Queen of Sheba.

Being always favorable to whatever promoted dental education, his voice was always in the affirmative for "association," and elevation of the standard of excellence in dental instruction and practice.

"The Brooklyn Dental Society," for years a lively and instructive association, was inaugurated in his office, No. 18, West Eleventh street.

He was President of this "First District Dental Society of the State of New York," for two years.

Unanimously elected a life member of the "State Dental Society."

Member of the "Academy of Dental Science of Boston."

Corresponding member of the "Odontographic Society of Philadelphia," and in 1863 was unanimously elected President of the "American Dental Association."

He had a fine tenor voice and was a skilled performer on the violin, which two favorite means of enjoyment were turned to good account by him, in that he was at various times Leader and conductor of the first orchestra in Connecticut. Conductor of a church choir for several years. For several years leading tenor of Christ's Church under the pastorate of Rev. Dr. Morgan, now rector of St. Thomas's Church, New York.

Member of the famous "University Quartette Club," of this city.

Member and at one time President of the Mendelssohn Union, and executive officer of the Mendelssohn Union at the time they brought out in common with Theo. Thomas and his orchestra, Beethoven's ninth symphony.

He obtained several patents for inventions, all conspicuous for their direct simplicity of construction and perfect adaptability to the end sought to be accomplished.

In disposition he was a man among men; during nearly eleven years of the most intimate business and social connection with him, the writer does not remember a single instance where he ever so far forgot himself as to raise his voice above its ordinary pitch.

There was never a moment when his brain did not dominate his every action.

It was to this quiet reservation of nerve force that he owed much of his professional success; enabling him to meet his patients with urbanity, control them when undergoing severe treatment, and with a clearness of judgment seldom equaled, to pick up exactly the right instrument at the right time and make every movement tell in furthering the work in hand.

Like his father, he was a spontaneous mechanician; and whatever he laid his hand to, was as it were by a spontaneous selection, done in a manner admitting of little or no possibility of revision for the better.

FRANK M. ODELL, Chairman.

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LEXINGTON, KY., December 9, 1882.

*To the President and Members of the State Board of Dental Examiners of Ohio:*

GENTLEMEN:—At the late meeting of the American Dental Association, held at Cincinnati, in August last, there were present at least twelve members of State Examining Boards, representing five different States. An individual interchange of experience and opinion relative to methods of examinations, possible uniform standard of qualifications and other matters of import, revealed the fact that under the present state of things, it could scarcely be hoped to apply the law with anything like uniformity in the different States, on account of imperfect knowledge of many important points connected with the same, and its enforcement. In order to bring the matter into more definite shape, a regularly organized meeting was held, at which every member of an Examining Board in the city was present. Here the objects

of the meeting were more fully discussed, and in furtherance of the views of those present, the undersigned were appointed a special committee. The duty of this committee is to communicate and consult with the different State Boards of Dental Examiners, to discuss all matters of importance relative thereto, and arrange for a meeting at a central point for representatives from every State which has an Examining Board.

The necessity for such meeting is certainly not within the pale of doubt, since the objects to be attained are of both special and general interest, and shared in common by our colleges, the profession, and the community at large. To state these objects briefly it is desirous that we secure unity of effort and systematic action relative to all questions touching the manner and standard of examinations, the uniformity of the laws' action in the several States in which Dental Laws exist, the relative duties of our profession, Boards of Examiners, and Dental Colleges, and the permanent organization of a society to consist only of members of State Boards of Examiners. Among the many questions which have already arisen and which will, in the near future, come up more frequently and persistently, is that of receiving the certificates of qualification of other State Boards in lieu of a re-examination. Some State Laws are silent on the subject, while the laws of Illinois positively prohibit it. In behalf of those to whom is entrusted the execution of the law, in behalf of the dignity of the law, and for the sake of those amenable to the same, and seeking its protection, this latter question should be hastily and definitely settled. The more fully these matters were discussed, the more it became evident that a full meeting of representatives of the different State Boards ought to be had, so that all matters of importance might be discussed and proper conclusions arrived at.

In pursuance of the wishes of this Cincinnati meeting, the Committee would earnestly request your Board to send its duly authorized representative to a meeting to be held in the city of Lexington, on the 20th day of February, 1883, beginning at 2:30 o'clock, and continuing one or more days as necessity may demand. Headquarters, Phoenix Hotel.

A. O. RAWLS, Kentucky,	} Committee.
F. H. REHWENKEL, Ohio.	
A. W. HARLAN, Illinois.	

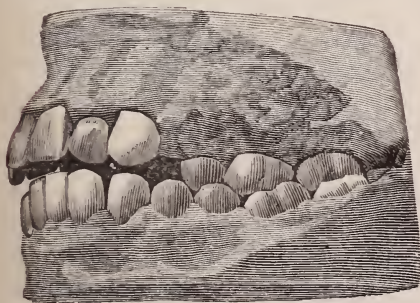
## REGULATING TEETH—A CASE IN PRACTICE.

BY DR. GEO. W. KEELY, OXFORD, OHIO.

FIGURE 1 represents the arrangement and articulation of the teeth of a young lady aged nineteen, as they appeared when she came to me in July, 1880, ten days after I had extracted the first superior bicuspid, which were badly decayed. Her parents had a normal dental development, there being no crowded condition of their teeth. Before the eruption of the first permanent superior molars, the temporary ones were removed, and they naturally came forward and encroached on the space designed for the second bicuspid, causing all the anterior teeth to be crowded forward. Then, as will be seen in the cut, my patient had lost her first permanent inferior molars—they were extracted when she was about twelve. The second molar shows considerable tilting forward; this occurred also on the right side.

The loss of these molars caused the anterior teeth to fall back, increasing the space between the front teeth. The second superior bicuspid were both crowded a little inside of the arch, the labial cusps antagonizing inside the inferior ones. No attempt was made to put them in their normal position, as my patient would not consent to have it done.

The appliance used in this case was a vulcanite plate, accurately fitted to the roof of the mouth with clasps around the



*Figure 1.*

bicuspid to hold it more firmly in place. On both sides, opposite the lingual surfaces of the first molars, the plate was made thick to receive a pin from an artificial tooth, to which was attached a ligature cut from rubber tubing, carried forward and over the cuspids.

The plate was removed daily

for about two weeks, when my patient cleansed her teeth, and new ligatures were adjusted. Then a T was made with a thin stem, on which was a little hook; this was passed between the central incisors, then another piece of tubing was attached to the



pins on each side and carried forward to the hook. Now we had four ligatures operating at the same time, two drawing the cuspids down and back, and the other two the *centrals* down and laterals back. This was re-adjusted almost daily for four weeks, when two-thirds of the space left by the bicuspid was closed by the cuspids, and the space between all the anterior teeth lessened one-half. She then left for her home in a distant city, promising to adjust the plate every night, with the bands over the cuspids, until they were well down in place, and often press the incisors down with her finger. How faithfully this was done I am not able to state.

Figure 2 is a perfect model of the case taken *twenty-three months* after the bicuspid were removed, and it will be seen that the third superior molar is being erupted.

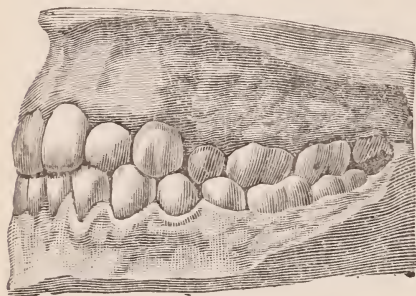


Figure 2.

This figure shows a very marked improvement in her personal appearance, as also there is a wonderful improvement in her enunciation. The cause of this abnormal condition of her teeth was,

doubtless, the premature extraction of the superior temporary molars, and the first inferior ones. Five years before I took this case, I *advised* the removal of the first bicuspid, and had it been done, the pressure of the lip would have corrected the case within three years. I make this assertion from an experience of a quarter of a century.

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## Editor's Specials.

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"Write the Vision and make it plain."

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## BEAUTIFUL AND INSTRUCTIVE.

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THE S. S. White Dental Manufacturing Company have published a **DIAGRAM OF AN INCISOR TOOTH** which any dentist can obtain by mail for the small sum of one dollar. We have seldom seen so much interesting instruction condensed into a space so

small. If you get it you will thank the JOURNAL for telling you about it. But this is the description of it:

DIAGRAM OF AN INCISOR TOOTH.

"This beautiful illustration of the minute structure of an Upper Central Incisor was published under the direct supervision of Professor Frank Abbott, M. D., and by special request of the Dental Society of the State of New York. The object was to give to the dental profession a correct idea of the minute anatomy of a tooth. If not absolutely perfect microscopically, it approximates so closely to nature that it conveys to the mind at once an intelligent understanding of the structure and relations of the organs.

"The diagram represents a longitudinal section of the tooth. It is  $13\frac{1}{2}$  by  $9\frac{1}{2}$  inches in size, and is printed in six colors. It shows, clearly, Nasmyth's membrane; the enamel, dentine, cementum, and pulp, with periosteum and socket of alveolar process, covered by the gum; the blood-vessels and nerves of the pulp; the odontoblasts surrounding the pulp; the direct connection of the non-medullated nerve-fibers with the odontoblasts, and the passing of those fibers between these bodies into the dentinal canaliculi, and the distribution of living matter in almost every direction throughout the dentine, finally reaching the interzonal layer (interglobular space), whence it enters the enamel, to which it is more minutely but as clearly distributed.

"Mailed in paste-board roll to any address. Price, \$1.00.

"Address the publishers or Ransom & Randolph."

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"AND HE DIED,"

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WAS said of Adam, the progenitor of our race; "and he died" is said of our good friend Dr. M. H. Webb. Will some one who know him better than we, and who knows more of his last illness, tell us about him?

Sometimes a man's heart is so large that it takes in his fellow-craftsmen; and such a heart was Dr. Webb's. Giving his time, talents, and energies to the dental profession, without hope of reward, expecting, no doubt, to be spared to provide a competency for his family, he is stricken with death, in the full tide of his usefulness.

His family needs the fostering care of the profession that has received so much from the husband and father; and we are grati-

fied to learn from the editor of the *Dental Cosmos* that "already, without solicitation, a score of operators have expressed their sense of obligation and their sympathy by generous subscriptions to a testimonial fund" for the widow and the orphans. Brethren, don't wait to be asked. Send at once to Dr. J. W. WHITE, Editor of the *Dental Cosmos*, who has kindly agreed to act as Treasurer of this Testimonial Fund. You all know his address.

## OHIO STATE DENTAL SOCIETY.

### SEVENTEENTH ANNUAL MEETING.

ACCORDING to adjournment the Society met in Columbus, in the Board of Trade Rooms, December 6, 1882. The President, Dr. Emminger, was in the chair, and the meeting, as usual, was opened with prayer. The forenoon session was mainly taken up with routine business, such as payment of dues, hearing reports, etc.

#### THE SUBJECTS FOR DISCUSSION,

as reported by the Executive Committee, were adopted as follows:

1. Mechanical Dentistry; the relative merits of the different materials for bases of Artificial Teeth and their effects upon the tissues.
2. Best method of filling roots.
3. Plastic fillings and their availability.
4. Dental periostitis.
5. Oral surgery.

The President having announced the first subject in order, Prof. J. Taft proceeded to discuss it, partly by reading a paper, which he said was not completed, and partly by extempore remarks. He did not regard the term Mechanical Dentistry as fortunate or expressive. True, the making of an artificial denture is a mechanical process, but so is the amputation of an eye or a limb, and so are the excavation and filling of a cavity in a decayed tooth. The term Prosthesis suggests the art of supplying a substitute for lost organs or tissues, and therefore, the corresponding adjective he thought gives a better expression to the idea. For this reason he liked the phrase prosthetic dentistry better than the one used in the programme.

Various materials he said, are used for base plates in artificial dentures, such as platinum, gold, silver, aluminum, porcelain, rubber, celluloid, and a number of alloys. Counting three alloys, we have ten materials in use, and each has merits, or it would not be used.

The quality most desirable in material for a plate is acceptability to the parts on which it is to be worn. The adaptation must be good, but the plate is not to bear equally on the parts pressed in all cases. The plate should be in contact with the parts, but with slight relief of pressure at some points, as, for example, over the harder portions of the ridge. This relief can be obtained by slightly paring the plaster cast.

It is desirable to use for base plates, substances which interfere but slightly with thermal changes. These plates, too, should be free from destructibility; and among the materials used there is a great difference in this respect. But two substances of the ten are absolutely free from chemical change in the mouth—gold and platinum. [When the buccal fluids contain cyanide of sulphur, sometimes called sulpho-cyanogen, gold plates are tarnished or corroded in the mouth.—*ED. JOURNAL.*] Both gold and platinum give good results, and as they require a higher degree of skill than some other materials the work is less likely to be slighted. They do not afford a lodgment for foreign matter as do some of the others, especially is this true of continuous gums. Some of the alloys he thought were often better than the vegetable bases. They are better conductors than rubber or celluloid, and the plates are less liable to change shape.

DR. BERRY thought it was very important to thoroughly learn all the details of mechanical dentistry. He was glad to see it recognized by this society to such extent that we find it the first item in the programme of business for the present meeting. In general it had been ignored or slighted both in the societies and the journals; and in practice it had been mainly given up to the "Cheap Johns." The better operators had nearly discarded it in practice; and when they did condescend to make a denture, they took so little interest in their work that it was but little, if at all, better than the "Cheap John" work. In everything else as well as in dentistry things have to be worked over, re-vamped, half-soled, etc.; and we must not ignore this.

Mechanical dentistry is important in its very nature. A poor toothless man or woman is a pitiable object,—is in a bad fix. The stomach is an important organ, and is usually faithful, working silently, persistently, and efficiently, yet withal so gently, that the man who has taken care of his stomach is quite unconscious of its action. But it cannot be imposed upon with impunity. It has



enough to do to digest the food after its proper comminution by the teeth; therefore those lacking teeth to masticate the food must be supplied with them. The business, like all others, is entitled to the best skill and talent; if attempted at all, only the very best work should be tolerated. It is sad that the prices are so low that good manipulators can not afford to touch the work. They are overwhelmed by the "Cheap Johns." They would better read the penny paper than work at such prices.

The best work is not too good for any one; and for those able to pay, gold ought to be used for plates—gold and platinum.

DR. WILLIAMS said that it is common to speak of greater skill being required in using metal; but he thought gold work as easily made as rubber or celluloid, but more time is required. Nor is more skill, but simply more time required in making porcelain work. He had not made continuous gum work, but had made very many porcelain pieces, and for full sets he preferred it. He had never seen unhealthy manifestations under a porcelain plate.

DR. G. W. KEELY asked if he had noticed cases where the patients wore their plates when asleep. He replied that he taught his patients to leave out their teeth at night, and so had not much opportunity to see cases kept in during sleep. He was favorably impressed by continuous gum, but very much pleased with porcelain base. He reported a case of disease under a vulcanite plate which soon became perfectly healthy under a porcelain. He thought the woman would have died had the change not been made. He compared wearing the plates during sleep with a similar wearing of shoes. He thought the feet would become sore.

DR. J. F. SIDDALL said that Prof. T.'s paper assumes that non-conducting plates are injurious. We want the proof; our bodies are mostly covered by non-conductors. We want to leave out dollars and cents in deciding what is best. We all know that rubber has whipped out gold—has whipped out almost everything. How do you account for that?

DR. J. TAFT said as to skill in making—the impression is the same; metallic dies do not require much skill. Nothing in preparing the plate requires great skill. Selecting teeth calls for more talent; but the same is required in all styles of work. Blocks for rubber work are harder to adapt than single teeth for platinum or gold plate. The same skill in adapting the teeth to the features of the patient is required in all work. He thought

after a short pupillage any good man would work gold or platinum in preference to vulcanite. A man becomes demoralized by working at anything below his highest skill. We should do only those things that ought to be done, and we should do those in the best manner possible under the circumstances.

DR. JENNINGS said it is very important to make the pressure direct in artificial dentures—not oblique. If made on porcelain or continuous gum he advised his patients to sleep with their plates in. He said failures sometimes resulted by trying to work out a case too quickly.

DR. H. A. SMITH inquired if it is true that vulcanite plates are poisonous, as has been claimed by some. He believed that it is used in ninety-nine per cent. of the cases that come under his observation. He believed that vermilion, the red coloring matter, is soluble in no acid but aqua regia, when it is chemically pure. In examining some cheap specimens of vermilion he had noticed gray granules mixed with the powder. He asked if these were free mercury. He said much of the irritation of mouths witnessed is due to filthiness. Many would have sore mouths regardless of the kind of plates worn. He had seen partial pieces made on rubber which had required far more skill than if made on gold. He said continuous gum work, generally conceded to be the best, will not meet the wants of the poor, bearing to them the same relation that silk dresses do, while rubber and calico correspond. A boy can soon learn to do rubber work, while gold is more troublesome, but the rubber made under such circumstances is not as good as it ought to be. Plain teeth, he thought, should be more generally used than they are.

But, he said, the question, is a rubber plate poisonous? still stares us in the face, and is more or less agitated in the medical journals.

DR. BERRY said we ought not to be obliged to go to the medical journals to learn the properties of vermilion. We, and not the physicians, are the men that ought to know. For a woman to have to leave her teeth out at night is worse than the nuisance of a night-cap.

DR. HERRIOTT said he was this day proud to see mechanical dentistry heading the programme. He said celluloid takes more kindly to mucous tissues than anything else.

DR. DORRANCE read a paper on the subject, discussing founda-

tion principles, but we were at the time too weary to report, and our few brief notes would not do him justice nor profit the reader.

DR. J. TAFT said that it is not strange mouths become sore. Even the pressure of a well-fitting plate is abnormal. The capillaries are pressed, diminish in size, the mucous follicles are interfered with and fail properly to perform their functions; and while pressure on living tissue excites absorption, vascular hypertrophy occurs in adjacent parts not pressed. He advised wearing plates at night if the tissues will tolerate them without injury. The mucus is ordinarily commingled with saliva, and the plate absorbs and retains these fluids till they become vitiated, and then they irritate the mucous membrane. He would emphasize the importance of equality of pressure, and cleanliness. We scarcely ever see a clean plate come out of the mouth. They are filthy, and the membrane is red and irritated.

Rubber he regarded as the most filthy base used, unless celluloid, and both are non-conductors.

DR. HERRIOTT said the surface of gold and platinum plates rejects the effete, offensive matter. The surface of rubber is more porous than that of celluloid.

DR. DORRANCE said a rubber plate may be made with a nearly non-porous surface. He said if pressure means consequent absorption, twenty-four hours of pressure mean more absorption than do twelve hours of pressure.

DR. H. A. SMITH asked if the alveolar ridge will absorb faster under a plate than without one.

DR. DORRANCE replied that the pressure of the plate is not natural.

DR. BERRY reported a case of a plate worn fifteen years and the fit was found to be as good as ever.

DR. KEELY reported a case in which a lady had worn a plate eight years without taking it out of her mouth. Of course it was found very filthy, and the roof of the mouth was raw and swollen, and ready to bleed on the slightest touch. He broke the plate in her presence, and told her to call in two months. He found the membrane in good condition and made her a new plate.

DR. WATT explained why pressure increases absorption. It lowers the vitality of the part, and hence impairs nutrition. Spent matter—that lacking vitality, is carried out of the system

by the emunctories. Absorption thus preponderating, there is a waste of tissue. As a boyish experiment, he had confined a leaden bullet on a fleshy part of his arm by a bandage till, by absorption beneath it, the bullet was imbedded the depth of its diameter, and two or three weeks were required to fill up the depression.

After some further rather miscellaneous discussion, the Society adjourned.

#### THE EVENING SESSION

was devoted to reading and hearing a paper by Dr. Watt, which had been approved by the Committee on Volunteer Essays. [This paper has appeared already in the JOURNAL. See long "Special" in number for January, 1883.]

(To be Continued.)

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#### CONFIRMATORY.

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IN the long paper read at the last meeting of the Ohio State Dental Society, and published in the JOURNAL for January, 1883, we tried to impress on readers and hearers the uncertainty in extremely high powers in microscopic research. We claimed that a clear evidence of this uncertainty is found in the frequent disagreements among observers as to what is to be seen. A brief article in the *Medical and Surgical Reporter* illustrates our position so clearly that we copy it in full as follows:

#### THE LATEST ABOUT BACTERIA.

"This time it comes from America. Dr. Formad, of Philadelphia, has made some experiments, from which he is led to believe that, contrary to the generally accepted view, bacteria are not the *per se* of disease, but are merely the vehicle of contagion, the means by which the poison of certain diseases is carried from one organism to another. He has found the tubercle bacilli of Koch, or, at least, bodies identical with them, in the sputa of non-phthisical patients.

"He has taken matter infested with the diphtheritic micrococci (first demonstrated by Professor Wood and himself) and has succeeded in producing the disease in animals, while micro-



cocci from the very same specimen, *after a thorough washing in plain water*, were perfectly harmless.

"He believes that bacteria exist in all nature, and that, even when charged with the elements of disease, they cannot produce the disease unless they find a resting place in some body that is, on account of some unexplained conditions, a suitable pasture for the growth and development of the particular disease.

"This view, which seems to be a very rational one, has two important practical bearings.

"In the first place, it teaches us very forcibly the value of water as a disinfectant, and in the second place it lends much additional force to the idea that infectious diseases are due to chemical influences, which theory, if demonstrated, will do much toward increasing the potency of our therapeutic resources.

"If these bacteria carry certain elements that are capable of producing disease, it is not unreasonable to hope that chemistry will step in and tell us the chemical nature of these poisons; from this standpoint it will be but a step to name the chemical that will prove the antidote, and by this process we can arrive at the most rational treatment of infectious diseases. Dr. Formad promises to have more to say on this subject, and we look forward to his researches with interest, for it would seem that he is on the right track."

The closing remark of the above is significant. It is something to be sustained in our opinions by so sound a medical journal, and by an experimenter so reliable as Dr. Formad. If the germ theory cannot explain the causes of disease in the soft tissues, much less can it in diseases of the hard. Chemistry, as yet, is not dethroned, much less expatriated.

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### UNGENEROUS.

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DR. CHASE has been temporarily editing the *Missouri Dental Journal*. The *Southern Dental Journal* expects to see "Dr. Watt after him for his amalgam proclivities. We verily believe if some one would whisper amalgam near the Doctor while he was sound asleep, he would immediately reach out for his tablet and begin to write."

That is an insinuation, but the truth is we have kept so quiet

in reference to amalgams that the leading dentists didn't know we had ever written a word or tried any experiments in reference to them. At a recent meeting of the Illinois State Dental Society, an able paper on amalgams was read by a prominent dentist of Chicago, and the paper was discussed as if its experiments and thoughts were entirely new, and near the close of the discussion Professor Taft told them that these were not new, but were mainly a repetition of experiments and observations made by himself and us twenty-five or thirty years ago. Afterward the author of the paper, and others, wrote us that they were not previously aware that we had written anything on the subject. We can't say what we might do if "sound asleep," but the above proves we have not had the habit of reaching out for our tablet when awake.

Nevertheless, we would be ashamed, if, when this, or any important subject is agitated, our position should be in the least doubtful.

A bright, young theological student, from Wilberforce University, near Xenia, Ohio, was color bearer in the 54th Massachusetts when it made the assault on Ft. Wagner. He was torn to fragments by a shell. With his mangled stumps he hugged the flag-staff, while its end rested on the earth. As a comrade seized the colors, to bear them aloft, with his last breath he whispered, "They have not yet touched the ground."

When our position is not known on questions of right and wrong, we feel afraid our colors have touched the ground.

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## CONSTIPATION.

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WHEN we take into consideration the habits of life necessary to the industrious practice of dentistry, in connection with the habitual carelessness of busy people in reference to their own health, we are not surprised to find constipation, with its deleterious accompaniments, a source of health-failure in our profession. Many, and perhaps a majority of cases of constipation arise from functional derangement, an atonic state of the colon being very often the origin of the trouble. This is more generally true of those advanced in years, but the young are by no means exempt.

In casting about for a means of relief, our attention was

called to the Compound Licorice Powder of the Prussian Pharmacopœia. We have found it both effective and pleasant. It seems to act mainly by increasing the peristaltic action of the bowels, and therefore does not debilitate like a medicine which causes serous transudation from their walls. The proper dose so closely imitates nature, that, while a free passage is secured, the patient is likely to forget that he has taken a laxative.

The formula is as follows:

Pulvis Glycyrrhizæ Compositus, or Compound Powder of Licorice.

Senna Leaves, . . . . .	$\frac{7}{3}$ vj
Licorice Root, . . . . .	$\frac{3}{3}$ vj
Fennel Seeds, . . . . .	$\frac{3}{3}$ iij
Sulphur, . . . . .	$\frac{3}{3}$ iij
Refined Sugar, . . . . .	$\frac{3}{3}$ xvij
	Mix,

and make into an impalpable powder.

The usual dose is a teaspoonful at bed time. It is easily mixed with water, and forms a not disagreeable draught.

It will be seen at a glance that it can be readily prepared by any druggist, and it is not expensive.

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## UNGATHERED THOUGHTS.

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OUR prostration, incident to the continued cold weather, has prevented our gathering up and shaping a variety of useful and interesting thoughts and suggestions. Among these stand prominently some valuable information from Professor Chappelle, of the Indiana Dental College, in reference to the organization and management of the college, and the obtaining and the working of the law regulating the practice of dentistry in Indiana. We hope to be able to use them in our next number, and if we find ourselves unable to classify and put them in shape, we shall appeal to the Professor to undertake the task on the principle that "one good turn deserves another;" and having received the one from him, we can, if necessary, ask for the other.

The papers on the amalgam question in the present, as well as in the January number, were prepared for the past year, but were crowded out. We intended them to close the discussion of this subject for the time in the JOURNAL. An article on this sub-

ject must possess peculiar merit to gain insertion soon. Not, however, because we regard the question as exhausted, or even sufficiently understood, but we wish to do justice to other subjects. This discussion was re-opened by the Illinois State Society. The paper presented there was read and discussed as if its positions and experiments were both new and original, but near the close of the discussion, Professor Taft told the members that similar experiments, with like results, had been tried a quarter of a century before. The author of the paper, and others, have written to tell us that they had been unaware that we had ever referred to the subject, and these are not new men in the profession; yet one journal seems to insinuate that we have written wholly on amalgams, and have ignored all other matters. The truth is, we had neglected this question for a quarter of a century, or more, and hence these middle aged men were wholly ignorant of our attention to it in the long ago. We are not apologizing for the attention the amalgam question has received from the JOURNAL. We propose to discuss, as we are able, all questions interesting to, and not understood by the profession. And we propose to allow all reasonable liberty of speech in such discussions.

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### BERRY—STOWELL.

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YES, sir! Well, yes, Sto-well it was, but Berry it is, all Berry; and all's well that ends well, and the bride's name ends 'well; and the JOURNAL says well done, and the cake sent us was well done, and we congratulate and rejoice, even though this little newspaper clipping is all we know about it. Verily, the Ohio State Society builded wiser than it knew in electing Dr. Berry its President. But here is the clipping:

### MARRIED.

BERRY—STOWELL—Jan. 3, 1883, by Rev. John Goddard, Dr. A. Berry and Elizabeth Stowell.

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### BE CAUTIOUS.

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MIGHT the following occur in an endeavor to produce anæsthesia by the Bonwill method?

PNEUMOTHORAX FOLLOWING EXCESSIVE RESPIRATORY EXERCISION.—A youth, aged eighteen, possessing an excellent constitu-



tion, amused himself one evening in exhibiting the power of his chest and the force of his breath. Suddenly he felt a sudden pain in the left side, his face became blanched, and he experienced great oppression. During the night he made attempts at vomiting, and in one of these efforts was seized with a sense of something tearing in his side. Syncope immediately followed. Dr. Delgrange was called in, and found unmistakable evidences of pneumothorax. Under appropriate treatment the patient recovered after about eight days.—*Jour. des. sc. méd. de Lille in Le Réveil méd., January 29, 1881.*

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## A TOUCHING APPEAL.

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BY A. GASPER.

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THE following "apele" is not new. It appears again and again, but still, not only in churches, but in schoolrooms, and especially in halls devoted to meetings of dental societies, pure air is as "scarce as bank bills when ajunts beg for mishuns." If its publication here causes one assembly to obtain "pewer are," in accordance with the laws of life, we shall be content that our effort is not wasted. Being a constant sufferer for want of breath we heartily join in

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## A APELE FOR ARE TO THE SEXTANT.

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[From the Christian Weekly.]

O Sextant of the meetinouse which sweeps  
 And dusts, or is supposed to ! and makes fiers,  
 And lites the gas, and suntimes leaves a screw loose,  
 In wich case it smels orful—wus than lamp ile;  
 And rings the Bel and toles it, and sweeps the paths;  
 And for these servaces gits \$100 per annum;  
 Wich them that thinks deer let em try it;  
 Gittin up before starlite in all wethers, and  
 Kindlin fiers when the wether is as cold  
 As zero, and like as not green wood for kindlins,  
 (I wouldn't be hired to do it for no some;)  
 But, but o Sextant there are one kermody  
 Wuth more than gold which don't cost nuthin;

Wuth more than anything except the sole of man!  
 I mean pewer Are, Sextant, I mean pewer Are!  
 O it is plenty out o dores, so plenty it doant no  
 What on airth to do with itself, but flize about  
 Scatterin leaves and blowin off men's hats;  
 In short its just as free as Are out o dores;  
 But O, Sextant, in our cherch its scarce as piety,  
 Scarce as bankbils when ajunts beg for mishuns,  
 Wich sum say is purty often, taint nothin to me,  
 What I give aint nothin to nobody; but O Sextant!  
 You shet 500 men, women and children,  
 Speshily the latter, up in a tite place,  
 Sum has bad breths, none of em aint too sweet,  
 Sum is fevery, sum is scroflus, and sum has bad teeth,  
 And sum haint none, and sum aint over clean;  
 But every one of em brethes in and out and out and in  
 Say 50 times a minute, or 1 million and a half breths an hour;  
 Now how long will a cherch full of Are last at that rate  
 I ask you; say fifteen minutes, and then what's to be did?  
 Why then they must brethe it all over agin,  
 And then agin, and so on, till each has took it down  
 At least ten times and let it up agin, and what's more,  
 The same individible doant hev the privilege  
 Of brethin his own are and no ones else.  
 Each one must take whatever comes to him.  
 Oh, Sextant! doant you know our lungs is bellusses  
 To blo the fier of life and keep it from  
 Goin out; and how can bellusses blo without wind?  
 And aint wind are? I put it to your konshens,  
 Are is the same to us as milk to babies,  
 Or water is to fish, or pendlums to clox;  
 Or roots and airbs unto an Injun doctor,  
 Or little pills unto an omepath,  
 Or Boze to gurls? Are is for us to brethe.  
 What signifies who preaches ef I cant brethe?  
 Whats Pol? Whats Pollus to sinners who are ded?  
 Ded for want of breth? Why Sextant when we dye  
 Its only coz we cant brethe no more—thats all.  
 And now O Sextant! let me beg of you  
 To let a leetle are into our cherch  
 (Pewer are is sertin proper for the pews);  
 And do it week days and on Sundys tew—  
 It aint much trouble—only make a hoal,  
 And then the are wil come in of itself  
 (It loves to come in where it can get warm).  
 And o how it will rouse the people up  
 And sperrit up the preacher and stop garps  
 And yorns and fijits as effectool  
 As wind on the dry boans the Profit tels  
 Of.

## SAINT LOUIS DENTAL SOCIETY.

THIS active Society meets the first Tuesday in each month. Its officers for 1883 are:

President, Dr. John G. Harper; Vice President, Dr. J. B. Newby; Corresponding Secretary, Dr. A. H. Fuller; Recording Secretary, J. W. Whipple; Treasurer, Dr. George Bowman.

The JOURNAL would be pleased to have a condensed report of each meeting, and a chance at the papers read; but a *Journal* on the ground might claim the first slices.

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Books and Pamphlets.

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“Of making many books there is no end.”

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TREATMENT OF ARTHRITIS OF THE TEMPORO-MAXILLARY ARTICULATION, by D. H. GOODWILLIE, M. D., D. D. S., New York City. Read before the American Medical Association. [Reprinted from the Archives of Medicine, June, 1881.]

We presume this can be obtained by addressing the author. It is brief, practical, and pointed. Those interested in the subject—and what professional man is not—may take the hint, and act accordingly.

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THE APPLICATION BY INSUFFLATION OF MEDICATED POWDERS TO THE UPPER AIR-PASSAGES FOR THE RELIEF OF CATARRHAL CONDITIONS. By D. H. GOODWILLIE, M. D., D. D. S. New York City. Read before the State Medical Society of New York. [Reprinted from the Archives of Medicine.]

A neat pamphlet obtainable from the author, and the most practical essay on the subject we have met.

# OHIO STATE JOURNAL

—OF—  
DENTAL SCIENCE.

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## Contributions.

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"A word fitly spoken is like apples of gold"—SOLOMON.

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### DENTAL EDUCATION.

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BY DR. E. D. SWAIN, OF CHICAGO.

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Read before the Illinois State Dental Society, May, 1882.

MR. PRESIDENT—The question of how best to prepare the student of dentistry, that he may, in his future, be a step in advance of the present, has agitated for many years the most advanced men of our profession, and the difference of opinion is no longer as to whether he shall be specially educated or not, but in what manner, and to what extent shall this special education be conducted to insure the greatest amount of proficiency to the greatest number, in the time usually set apart in one's life in preparation for a life's work?

Mr. Charles Tomes, in an essay read before the "International Congress of Medicine," held in London, England, in August, 1881, discusses this question so ably and practically, that it seems to me he has exhausted the subject, and were it not a recognized fact that this, like some other subjects, must be kept continually before us to insure results, I should have despaired, and read to you his



essay and thereby saved myself the labor of preparing a poorer one, as well as giving to you a more profitable and pleasurable hour's entertainment. That the dental practitioner needs to be better educated, and that the qualifications necessary to successful practice in the future will be of a higher order than now, no one present will negative, and it is a question which interests the general public no less than the members of the profession themselves.

I cannot but feel that time has very materially modified some of the views which have been advanced in the past, and that less credit is assumed by those who have agitated the question than formerly, for the part acted and ideas advanced by them. The fact appears to be recognized that the advance of the times demands higher acquirements in all departments of industry, and is forcing upon us the agitation of this, with other kindred topics, and, as in collateral sciences, there is an unseen force pushing our own profession forward to something higher and better, to resist which is as futile as to attempt to bridle or guide the winds.

At the same time we feel that differences of opinion, and discussions as to methods, provide the necessary friction to stimulate our thoughts and in the end will give us some plan more nearly approaching perfection.

Take if you please the history of education itself, and seemingly we are now only following out, in an improved way, the ideas advanced centuries ago.

The different theories advanced, antagonistic, have so modified the whole, as to give us a more complete and universal system.

I know of no more profitable way, than to compare and discuss, in an essay upon this subject, the past, present and future of dentistry, what special instruction is necessary, and whether our exertions as at present put forth are such as will accomplish the greatest amount of good in the end.

The dental education of the past consisted in sufficient knowledge and manipulative skill to extract the natural organs and replace them with substitutes, through a process so long and expensive that only the few could avail themselves of such services. Later a possibility of stopping the ravages of disease upon the natural organs suggested itself; this grew until the era of metallic fillings was reached; then with extended practice and observa-

tion it became apparent that there existed many diseases of the mouth and associate parts, which demanded special treatment, and thus has the growth been onward and upward until our present.

Indeed, it is comparatively of late years that dentistry has occupied anything like a properly recognized position among the different departments of minor surgery, even in those countries which for so many years provided us with the scanty literature which we did have, and all that was scientific in the profession.

For years dentistry was practiced in England as in this country, (to a large extent,) as a superadded means of livelihood by persons engaged in other pursuits, without any professional education whatever, dentists having been educated with a view to proficiency in the mechanical. And from records, it appears that as late as 1856 there were not more than fifty of all the numerous body of so-called surgeon dentists of the United Kingdom possessing any surgical or medical diplomas.

The blacksmith, barber, watchmaker, and others of similar callings, were the dentists of the villages and country towns, and even in the cities dentists of this class were to be found, practicing under the very shadows of universities and medical schools.

Mere tooth drawing constituted the surgical in dentistry of those days, demanding more muscular development and manual dexterity than anatomical knowledge or surgical skill, consequently it presented few attractions for medical men.

It appears that later this condition of things attracted the attention of the few qualified men practicing, and some anxiety began to be manifested to be recognized under the medical act then in existence; but this desire met with the opposition of the fully qualified medical men, who objected to the fractionally qualified being placed upon an equal footing with themselves.

Discussions following resulted in three classes coming to the front, with the following propositions:

First. Those who desired to see all dentists fully qualified surgeons.

Second. Those who wished them to have only a certain amount of surgical knowledge, and in this way be subordinate to fully qualified practitioners.

Third. Those who advocated dentists and physicians being

altogether dis-sociated, and having colleges and diplomas of their own.

The first proposition presented so many obstacles as hardly to be considered. The second revived the old tendency of desiring to appear a kind of surgeon without having attained the necessary knowledge. The third was abandoned upon a prospect and hope of in some way being attached to the Royal College of Surgeons. The difficulties which then presented themselves were not few or easily overcome.

The most serious objections presented were the mechanical requirements of the dentist, which it was claimed must of necessity be added to the qualifications of the surgeon, thereby entailing a very protracted period of education.

As none of the schemes suggested seemed to meet the approval of the majority interested, nothing came of them but controversies, which apparently were only leading further and further from the end sought, when the College of Surgeons, by consent of Parliament, issued a dental certificate to those proving themselves qualified by examination.

Thus, upon both continents, with extended knowledge and a laudable ambition, we observe a popular desire to be less of the artisan and more of the professional, and with this a clamor for recognition as a part of the great school of medicine and surgery. Resistance taught the ambitious that such recognition could only be secured by an exhibition of those qualifications which were most noticeable for their absence.

This has led to the establishment of societies, dental colleges, and other means of education, the results of which we are beginning to see all about us in a better educated class of practitioners, with laws for the protection of both the practitioner and the people.

Thus, as we trace the dental education of the two continents we observe that it has traveled on nearly parallel lines, and stands pretty nearly upon the same basis.

At present dentistry is so far recognized by the general practitioner of medicine as a separate profession or specialty of medicine, that whenever any difficulty presents itself in their practice, involving the dental organs and associate parts, the patient is at once referred to the family dentist; and further, if rumors are



correct, it is now considered worth while in some localities to establish in medical schools a chair relating directly to this science for the benefit of those preparing for the practice of medicine.

That a necessity exists for such a departure is evident from the testimony of an honest physician who wrote an article which appeared in the February number of the *OHIO STATE JOURNAL OF DENTAL SCIENCE*. He says that he knows personally that dentistry is taught in medical schools, for in one of them during a four months' course the Professor of Anatomy and Physiology devoted a full half hour to the consideration of the teeth, and the Professor of Surgery one entire lecture in talking about extracting teeth and the instruments used; and he says further, that experience in his practice has taught him that there was far more need that the medical practitioner be educated in dentistry than that the latter should have a general medical education, and asks if there may not be two sides to the question of recognition, and whether the dentist who holds a diploma should be compelled to fraternize with the physician who has not taken a special dental course.

Such recognition and such confessions we shall find will prove a great help toward our final recognition as a special and necessary profession by the people. And now having gained the recognition we have so earnestly sought from the medical profession, we are dissatisfied, and have returned to the old agitation of the old questions, as to what special training is necessary for the man, who at present or in the future may follow the calling of a dental practitioner; I ask you, gentlemen, are we not wasting time in these discussions? Would it not be better to content ourselves in a better preparation through the means at hand, or to at once evolve a new departure?

It is, I believe, conceded that the American dentist excels all others in manipulative ability, and we may perhaps profitably enquire how far the old system of dental education is responsible for such a condition. Many of the best dentists in this country, operative and surgical, have never had the advantages of the modern college; instead they entered the offices of the best men in the profession of their day, and while still young in years, became proficient in the mechanical part of our business.



I have somewhere seen it stated that, whatever a man acquires in manipulative skill, is learned, as a rule, before he attains the age of twenty-five years. Upon this question Mr. Charles Tomes presents the following, "that in England during the first and second decades of the present century, most of those practicing dentistry were members of the medical profession, and were very deficient in constructive matters, and were compelled from the first to depend upon dental mechanists, or those who had become dentists by entering the dental laboratories and serving an apprenticeship of five or seven years as mechanists, but were possessed of little or no medical knowledge;" and draws this conclusion, that the one class spent those years when to learn is easy, and authority in the teacher effective, in the acquisition of manual skill; the other in the acquisition of medical knowledge.

Hence two distinct classes; one competent to advise, the other competent to treat, but neither fully competent both to say what should be done and do it.

Intelligent practitioners on both continents observed this condition of things, and once more resumed the discussion of the questions before us to-day; and it was concluded that schools specially devoted to the preparation of young men for the practice of dentistry were a necessity, and that the medical knowledge necessary should be acquired at the same time that the student was perfecting himself in the manipulative or mechanical knowledge necessary for a successful practitioner.

Such schools well established, and the necessity for a special medical instruction met, then arose the question whether it could not be best acquired in a school where good talent was already employed, with the addition of the necessary professorships for special instruction in the manipulative and mechanical branches. A trial was soon followed by a protest from the students in dentistry against carrying so many studies which were to be of little or no use to them beyond disciplining their minds to study. Being excused, they were once more upon a similar footing, though not quite the equal, to those who had entered the plain dental college.

The following arguments may be presented in favor of medical schools with dental attachments:

First. It throws together the future physicians and dentists

while students, with a tendency to obliterate, in a measure, that distinctive social exclusiveness which has for so many years existed in the medical profession, to the detriment of the dental student when educated in separate schools, and will help to elevate the practitioner of dentistry in the estimation of those in general medical practice.

It has been frequently urged before this society that the dental should come as supplemental to medical knowledge, but to my mind there exist serious objections to such a course, among which may be enumerated the following.

The average student of dentistry has neither the time nor money for so long a college pupilage as this would require.

Second. That as before stated, very much of the knowledge necessary to the general practitioner, while not detrimental to a dentist, would be superfluous and useless in the practice of his chosen specialty, and the time necessarily spent in its acquirement he needs to qualify himself in that manipulative dexterity so essential to the dentist. Mr. Tomes says, "A dentist first and doctor afterwards," but even this proposition is, to my mind, open to objections.

A dental student having spent some years at private pupilage in the office of a preceptor, and two or three years at college, requires and should use the following few years to establish himself in practice of the profession his education has fitted him for.

As well might he devote two or three years to the study of theology, law, or in gaining a commercial education. I would not be understood as objecting to the dentist being fully versed in all these professions, for I fully concede that he needs theology to teach him patience, and those other Christian virtues which he will so much need in his future. Law to enable him to protect himself from cut-throat leases and to collect his bills; and a commercial knowledge sufficient to enable him to invest and care for the immense income, which his fertile imagination has pictured to him when once established in practice.

But I must admit that my observation does not lead me to the conclusion that the dentist who first graduated in medicine, or who spent his younger years in the study or practice of theology, or law, failing in which, he afterwards turned his attention to dentistry, is any better qualified for the practice of his later

calling, than are those who satisfied themselves with the curriculum of an "American Dental College." Indeed it would be far more profitable for one having the time and inclination, to devote the earlier years to giving himself a good literary, or classical education, thereby fitting himself to mingle with and become a part of our most refined and intelligent society. This not only for his own enjoyment, but as a sound business investment.

If further argument were necessary upon this point, I would refer you to the most successful practitioner of your acquaintance for the knowledge as to how much of the mass of minute facts to which he devoted so much time and hard study when a student, he now remembers, beyond a general outline of the subjects, and I guarantee he will excuse himself for his very oxidized condition, and also inform you that he does not consider it profitable to burnish up.

Now, in conclusion, let us briefly consider what is required of the student who enters a college of dentistry, and see how much time he has to devote to studies collateral to, but not essentially necessary in the practice of his profession:

From a fair average of the "Order of Instruction" in six of the most popular dental colleges in America, I find that sixty hours each week are given to the college. Fifteen lectures which occupy twenty hours of the time; the other forty are to be divided between infirmary practice, clinics, mechanical dentistry, dissecting and laboratory work. This, understand, is in the purely dental college, and is twenty-four hours more time per week than is required of students in most other institutions of learning. In fact, a graduate from Ann Arbor University (but not in dentistry,) informed me that it was admitted in all departments that more was required of the dental students in that institution than from any of the others. If the above calculation be correct, the student is compelled to spend ten hours per day in the class rooms, and in order to be prepared for the following day must study nights and Sundays. It may be argued that much of this time is devoted to listening to lectures, preparation for which is unnecessary; and judging from some specimen graduates which the writer has had the pleasure of meeting, I should judge the argument had been practically carried out.

Gentlemen, take this matter home to yourselves, and after mental inquiry inform us how much time, under the above order



of things, you think you could devote to obstetrics, general practice of medicine, eye and ear, lungs, surgery or collateral sciences?

To close, I feel that I am warranted in the assertion that the more physician we find in the man the less dentist. I mean by this that when the student is more interested in those studies necessary to make a practical physician, he should be such, and not attempt the practice of some other calling in which he is only indifferently interested.

It is only those who are "men of one idea" who succeed best and reach the highest round of the ladder of fame. Darwin only attracted the attention of the world when he opened the book of nature and gave his undivided attention to the evolution of the origin of species; Longfellow, when he applied all his thoughts to poetry; Carpenter to physiology, etc., examples of which could be continued indefinitely. And so with ourselves. If we would succeed in our own profession we must give our undivided attention to it.

It seems to me that those men who have graduated from the dental colleges of the day, and have afterward mingled with the profession, hearing the views of the masses in practice, which, added to their own knowledge of what is needed, are the ones to evolve a correct method for the education of the future dentist.

Finally, allow me to say there is no cause for discouragement, but on the contrary every reason why we should look forward to a bright future. A better class of young men are entering our profession, a much larger number are graduating, and many of us present here to-day will live to see the specialty of our choice the peer of the medical profession in intelligence and all that goes to make an honored and trusted profession.—*Ill. Transactions.*

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## ANOTHER METHOD OF REGULATING TEETH.

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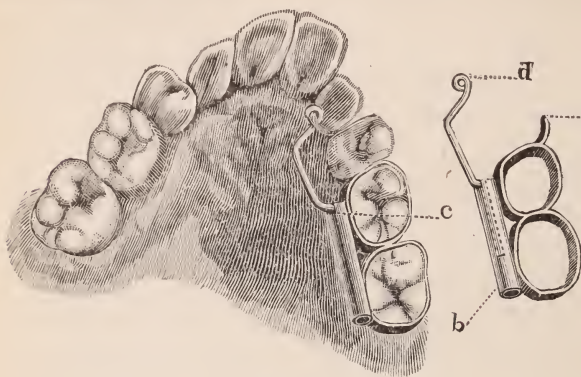
BY THOMAS L. GILMER, D. D. S., QUINCY, ILL.

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So much has been said about correcting irregularities of the teeth, that it may seem superfluous to add more; however, I am using an apparatus so serviceable that, not having seen anything similar described in our literature, it is possible that an account of it may be timely.



The object of all appliances for regulating teeth is to produce pressure in a given direction upon such teeth as need to be moved. An appliance capable of exerting constant pressure at a given



*Fig. 1.*

a majority of cases I have found that springs, held by bands around the teeth, more nearly meet these requirements than any other method known to me. The plan which I have to offer, though simple, will be found very effective. Its principles are clearly set forth in the accompanying cuts, the drawings for which were kindly made for me by my friend G. V. Black, D. D. S., of Jacksonville, Ill. These special cases are simple, so far as the moving of the particular teeth in hand is concerned, yet they demonstrate the working of the plan as fully as more difficult ones.

To form an appliance like that represented in Fig. 1, (Fig. 2 being made in precisely the same manner, with the additional bands and connecting bar to be described later,) secure a cast of the mouth, study it, and decide which teeth will best serve to carry the bands destined to hold the spring. In the case shown in Fig. 1, the only remaining milk tooth on this side of the mouth, and the first permanent molar, are selected. The bands may be made of gold, but platinum is preferable, because it can be worked thinner than gold, without danger of melting in soldering. They should be made to encircle the tooth or teeth completely in such a manner as to bring but one thickness of metal between the teeth; this may be done by using one piece of uncut metal for both bands, as follows: Put the strip of platinum around the milk tooth in such a manner as to bring the first line

point, one that is most easily made, that occupies the least space, and that, when applied, needs the least attention, will give the greatest satisfaction to both operator and patient. In

of solder to its disto-lingual angle; the free end is then carried around the first permanent molar and soldered to the band already around the milk tooth, at its disto-buccal angle. This completes the two bands from one piece of metal.

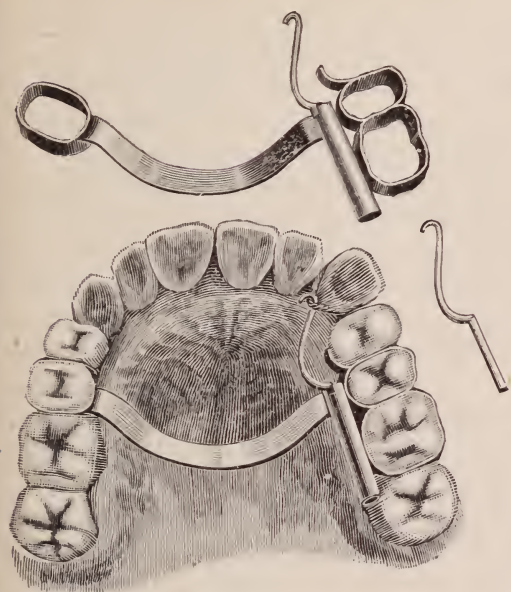


Fig. 2.

In order to put the pressure on as many teeth as is convenient to prevent the possibility of moving them, solder a spur, *a*, to the anterior buccal portion of the anterior band, so that it will catch upon the bicuspids. Next, from the same metal, form on a piece of wire, corresponding in size to that which is to serve as the spring, a tube, *b*, varying from one-fourth

to three-fourths of an inch in length, as the case may demand. Before soldering this tube it should be filled with pumice or soap-stone, to prevent the solder flowing into it and diminishing its caliber, thereby interfering with the easy adjustment of the spring. The tube is then soldered to the bands in such a manner as to hold the spring in its proper relation to the tooth or teeth to be moved. The bands should be from one-third to one-half as wide as the teeth are long, according to the case in hand, and of thickness, No. 28, or even less. For the spring I find nothing better than piano wire. The only objection that can be urged against it is that it corrodes slightly in the mouth; this amounts only to a blackening of the wire, its polish being retained, and this is of little consequence, since it is usually out of sight. (If our dealers would furnish us with nickel plated piano wire, it would be just the thing needed.) Either platinum alloyed gold, or spring brass wire may be used in lieu of the steel, but the steel is preferable.

A wire of the same size as that upon which the tube was formed, is bent, without being heated, at a point corresponding in length to that of the tube, and in such a manner that when applied it will catch in the slot cut in the tube at *c*, to prevent the rotation of the spring while in use; the remainder is shaped to suit the case in hand, so that it may exert its full force in the direction in which the tooth is to be moved.

It will usually be found necessary to have some means of fastening the spring where it comes in contact with the tooth, to prevent it slipping if pressure is made *toward* the tooth, or to fasten the ligature connecting it with the tooth, if the latter is being pulled into line; in either case a turn may be made on the wire at this point, as shown in Fig. 1, *d*, by means of which it may be securely tied to the tooth to be moved.

The teeth upon which the bands are to be placed, having been previously wedged apart, the appliance, being now complete, is put in place and the spring adjusted until the required pressure on the tooth to be moved is obtained, when, if necessary, it is secured to the tooth and the patient dismissed with the satisfaction of knowing that the work will go steadily on, rapidly or slowly, in proportion to the weakness or strength of the spring.

When the tooth has moved so far as to allow the spring to obtain a position of rest, the wire is re-adjusted in such a manner as to cause it to resume pressure. In determining upon the size of the wire to be used as a spring, it is necessary to take into consideration the length of the spring, the number of teeth to be moved, and the probable resistance which they will offer. If, as in Fig. 1, a small tooth, and only one, is to be acted upon, a small wire, No. 19, standard wire gauge, will be amply strong, as a small amount of pressure constantly applied will exert a greater influence in moving teeth than a much greater force periodically applied, and at the same time cause very much less pain and inconvenience. For a case like that represented in Fig. 2, a stouter wire will be necessary. If sufficient anchorage can be obtained, two or more teeth may be simultaneously moved by one strong spring, provided pressure can be made upon the several teeth in a proper direction for each tooth. This, however, can seldom be accomplished by the use of one spring alone; and in some cases it is desirable to make a pull on one tooth while pressure is to be exerted on another. In such cases I solder to the bands two



tubes, or carriers, for the springs, and form for each a spring which works independently of the other, thereby obtaining the required pressure and pull, at the same time adding little in size to the appliance. The anchorage for one spring will be sufficient for the two, if the pressure is being exerted in opposite directions, as the influence exerted by the one is, to a certain degree, offset by the action of the other.

If there be an insufficient number of available teeth on the side of the mouth to which it is desirable to attach the bands, the teeth of the opposite side may be utilized, as is represented in Fig. 2, to aid in preventing the moving of the teeth to which the spring is attached. In this case there are bands placed on the teeth opposite those carrying the spring, and the two sides are connected by a stiff gold bar shaped to follow the concavity of the hard palate.

Its shape not being calculated to offer great resistance, this bar should be sufficiently broad and unyielding to withstand the strain brought to bear upon it. By the addition of the extra bands and connecting bar, heavy lateral pressure may be exerted, sufficient to bring into line the most obstinate canine without fear of moving the teeth to which the appliance is attached.

When it is desirable to rotate an incisor it may be done, soldering a tube or carrier to the labial as well as to the lingual sides of the bands, and forming for each a spring, one of which will make pressure upon the labial, while the other exerts its influence upon the lingual projecting angle of the tooth to be rotated. In such cases it will generally be found that the ligature is insufficient to hold the springs in their relation to the tooth, and the more substantial method of encircling the tooth with a band of platinum, which has catches upon it to hold the spring, will be necessary. If the occlusion of the teeth will permit, it may also be accomplished by the use of one spring only, by attaching the tube or carrier of the spring to the tooth to be rotated, the free end of the spring being so adjusted as to rest against the neighboring teeth, and secured to them either by ligature or otherwise.

In some cases, owing to the difference in the size of the teeth at their necks and grinding surfaces, the bands, when applied, are too loose, and consequently are unfit for the purpose for which they were intended. To obviate this difficulty



the bands may be applied and secured to the teeth by means of some one of the zinc preparations. This method of fastening bands to teeth was brought to my notice by Dr. Morrison, of St. Louis, he using it in connection with his jack-screws. If a tooth is to be rotated, the band upon it should generally be secured by this means, since we are thereby enabled to use much thinner platinum than otherwise.

The main points to be observed in the construction of these appliances are, to secure firm anchorage, and to form and adjust the springs so that they will make the desired pressure in a line corresponding to that in which the tooth is to be moved. No great skill is necessary in the construction of these appliances; a knowledge of mechanics and some acquaintance with the working of metals will be requisite, but, owing to its simplicity, anyone who has had even a limited experience in this line, will succeed.

Among the desirable qualities which appliances made after this plan possess, are, simplicity and ease of construction, adaptability to a great variety of cases, and the power of exerting constant pressure without the attention of either operator or patient. It occupies the least possible space in the mouth, and is easily cleansed without removal.

Springs of this kind may be used in combination with rubber plates, if desired. If a plate is to carry the springs, it should be made so as to reach the teeth on both sides—should be made light and so that it may be securely ligated to the teeth. At a proper point on the plate the rubber should be sufficiently thick to permit the drilling of holes into it suitable in size to accommodate and hold the springs. This combination can be made to work very satisfactorily in many cases; the objection to be urged against it is the necessity of a plate in the mouth.

I might continue at length in the description of appliances for the great variety of cases which present for treatment, but do not deem it necessary, since I feel well assured that the few hints given will be ample, and that the skillful operator will from this description be enabled to adapt the principles involved to his patients. In a majority of cases its use will obviate the necessity of the more cumbrous and more complicated appliances, such as plates, jack-screws, &c., which cause the patient and operator much inconvenience and worry.

## OXY-PHOSPHATE OF ZINC.

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BY E. G. BETTY, D. D. S.

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ONE of the most useful materials in the daily practice of the operator is the oxy-phosphate of zinc. So useful and reliable is it, that it has quickly superceded the oxy-chloride, formerly so greatly in demand to meet the requirements of just such an article. As the material is comparatively new, and its manipulation somewhat different from that of the chloride, it may not be out of place to hazard a few suggestions in regard to its manipulation and uses. The properties depend, of course, upon the chemical process that takes place when the powder, oxide of zinc, and the solution of phosphorous acid, are mixed together. This change, whether it is solely chemical, or an obscure process of crystallization, or a combination of the two, one following the other, is beyond the province of this paper. That question is left for the chemist, who is welcome, at any time, to give us the result of his investigations. The intention is merely to outline the practical; that, to most operators, is, after all, of the most value. So far as the mixing of the oxy-phosphate is concerned, it may be laid down as a rule, that the powder is in all cases to be added to the solution. The required stiffness or flaccidity of the mixture is to be governed by the amount of powder added to the liquid. After repeated trials, and an aggravating experience, this method has been found to give the most satisfactory results. In very large cavities, not encroaching too near the pulp, when the intention is to fill with gold at the same sitting, it is desirable to guard against the shock of violent and sudden thermal changes. As a barrier between the metal and the dentine, it subserves a good purpose. Should the dentine be very sensitive, the oxy-phosphate is better made stiff and quickly pressed into place with a suitable burnisher. When mixed stiff the affinities of the base and the acid are so nearly or completely satisfied that there does not remain upon the surface of the plastic bolus sufficient acid to produce the sudden and acute pain that so many patients complain of. This pain, which so many operators make the ground of their objection to the use of the oxy-phosphate, is due to two

different causes: First, when the material is made thin the acid predominates and immediately attacks the sensitive surface of the dentine in the cavity. Second, even though the phosphate be made stiff, it may at the same time be so far below the tooth in temperature that, when introduced, it will cause pain by immediately absorbing heat from the tooth. This is reasonable to suppose, because the cavity is dry and the bolus (if it may so be termed,) is wet and of lower temperature. In the first instance the pain may be avoided, to a considerable degree, by previously lining the cavity with the dry powder. The thin mixture can then be poured in safely, the powder receiving and combining with the free acid, thus protecting the dentine. Should the cavity be in the upper jaw, the thin mixture can, with little difficulty, be flowed in by first touching some interior point of the cavity with a small quantity of it. The bulk once touching this point of attraction, will readily flow into place. If made thin, the phosphate will necessarily require more time to set and become hard enough to withstand the percussion of the mallet. In the second case the materials ought to be prepared on a heated surface, to raise the temperature of the mass near that of the tooth. This is simply done by mixing it on the bottom of a tumbler previously containing hot water, or upon a square of glass or porcelain that has been warmed near the stove. The addition of heat to the mass, however, will hasten the setting, and it will be found necessary either to add less powder to the liquid, or be very, very expeditious in introducing it into the tooth. A little close observation will enable the operator to determine just the required consistency, and the rapidity of crystallization when mixed warm. The adhesion of the mass to the instruments while handling it, is very annoying to those who are too lazy to slightly oil the instrument before using it. Instead of being an objection, this very adhesiveness is a desirable quality, and often serves us well when the cavity is of poor retaining shape, and we wish to fill temporarily. In such cases the adhesion will be found greatest when the mass is mixed thin. For capping an exposed pulp successfully there is probably nothing better than the oxyphosphate, if it is properly handled. In the estimation of the writer, many failures are due to reckless excavation, and the consequent pain to which the pulp and surrounding dentine are subjected. The less pain attending the capping of the pulp, the



greater will be the chances of ultimate success. After the excavation is completed the pulp can be covered with a thin skin of gum by flowing over it a little of the compound tincture of benzoin. The walls of the cavity may also be coated with it, a few moments only being required for the evaporation of the alcohol. It may be expedited with the warm air current, gently and gradually applied. The covering of gum may be thickened, if desirable, by two or three applications of the tincture at short intervals. A small quantity of the phosphate may now be mixed thin, on a warmed surface, and flowed directly over the exposure, allowing it to run over the edges so that it will bear upon the solid dentine. When hardened the capping may be trimmed with an excavator. The cavity can now with safety be filled as an ordinary one, without fear of producing pressure on the pulp. It is best to fill with a stiff bolus of the phosphate and allow it to remain for a year or more, as the material is good for that length of time in the majority of mouths; longer in some. By proceeding in the manner above detailed, the operator will avoid producing that "shock" to the pulp that is caused either by placing in direct contact with it an irritating acid, or suddenly reducing its temperature. If the pulp is outraged by careless handling and its sensibility subjected to a severe trial, we cannot hope for, much less expect, it to recover its wonted functions. It may not be generally known, but it is nevertheless a fact, that a violent toothache, due to an exposure, may be almost instantly controlled by an application of the compound tincture of benzoin. It was this fact that suggested to the writer the propriety of using it as a preliminary covering for the pulp; and experience has proved it very efficacious in many instances. It also serves very well when applied to the dentine over and around the pulp, during excavation, taking care not to flood the cavity with it while cold. The pledget of cotton saturated with it can be warmed over the lamp. The soothing effect of this tincture may be due, in some degree, to a slight anodyne property of some of its ingredients. It is probably more likely that its effect is owing to the evaporation of the alcohol, leaving a film of sticky gum that completely protects the surface from the atmosphere. Be that as it may, it is well worthy of a trial, and will not be found ungrateful. However, it was not intended to discuss the treatment of exposed pulps; and the digression may be pardoned on the ground that it



is difficult to exclude it when considering the subject of this article.

Fossiline, the English preparation of the oxy-phosphate, (for it can scarcely be anything else,) that was introduced a year and a half ago into the United States, is a very good one. It requires some patience to obtain the best results from it, as it sets very rapidly. If mixed too stiff it will not bear much manipulation while introducing it, the tendency being to crumble or granulate, and, in consequence, losing its integrity as a mass. This, in fact, is true of all the oxy-phosphates, but is not necessarily an objection to it, for it can be guarded against. The phosphate is a very good material with which to fill very sensitive teeth, when it is desirable to postpone, indefinitely, the introduction of a metallic filling. For this purpose it is much superior to the gutta percha fillings. After six months or a year, the greater portion of the phosphate can be removed and the metallic filling put in over the remainder. The sensitiveness will by this time have been greatly modified, or will have disappeared. A great deal can be said about this material and its many uses as a temporary filling for dead teeth, sensitive ones, exposed pulps, etc., with which the reader is familiar, making it superfluous to repeat.

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## "ABOUT IMPRESSIONS" AND OTHER THINGS.

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BY DR. L. P. HASKELL.

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THERE is so much written and taught in dental journals and colleges, or some of them, of methods in metal work that ought long since to have become obsolete, that I feel impelled to write a few thoughts that may be helpful, for the benefit of the younger members of the profession, and those who are about to commence practice, and who so often become discouraged at the drawbacks they meet with in consequence of the annoying and uncertain methods in which they have been instructed, that they prefer to stick to "rubber" work.

Fine-spun theories about the shrinkage and expansion of plaster are well enough to talk about, but when offset with

successful results in a 37 years' practice, confined to the mechanical department, in which such theories have been entirely ignored, they are of little account.

To say that plaster will not make a sharper impression than wax or modeling compound, is arrant nonsense; and to compel a student in college to spend weeks of valuable time in learning to take wax impressions, (and I have known some such, who, after graduating, could not take a plaster impression successfully!) is an imposition that ought not to be tolerated.

After the impression, the next move is preparing the model or cast for moulding. Here again come in nonsensical theories about the use of shellac and oil in filling the impression, etc. Thin shellac strikes in to the plaster, and does not make an increase of thickness on the surface that is of any account whatever, while it is of value in separating the impression and cast, so as to see plainly what is one or the other. The thin coat of oil is equally unobjectionable.

In dispensing with defined air chambers, which are superfluous, the plate should be raised over the hard palate, slightly. There are two methods of doing this: one is to scrape the impression, and the other to raise with a thin film of wax the plaster cast. I have heard of a professor in a dental college instructing his pupils to take a piece of lead and lay it upon the die, and swage the plate over it! The method ought to be patented. Scrape the rear of the cast slightly between coronoid process and near to the center, from where the edge of plate would come, *forward*  $\frac{1}{4}$  of an inch.

Make the cast flaring all around, so that it may *drop* from the mold readily, bearing in mind that the cast will deliver itself from the mold if thus flared with less tearing away than can possibly be done by lifting it out.

If the case is badly *undercut*, make a "core," thereby avoiding in a simple way the necessity of using the so-called Hawes' Flask. After the cast is shellaced, oil the portion that is undercut, and spread on a thin coat of plaster and asbestos, say  $\frac{1}{4}$  inch at the base and so to a thin edge at top of cast. This must be thoroughly dried, no matter how rapidly; then putting in place on the cast, mold, and as it drops out with the cast replace it in the mold, and pour the metal.

For dental dies there is but one metal that fulfills all the

requirements—which are *non-shrinking, hardness, toughness, smoothness*—and melting at a low temperature, and that is Babbitt metal. But, remember, that all sold by that name is not fit for the dentist's use, because it is made for another purpose and is not needed so hard. To insure the proper article, make it as follows: 1 part copper, 2 parts antimony, 8 parts tin. Melt in a crucible, in a forge, *in the order* named. As soon as the tin is put in turn off into ingots and re-melt. For the counter die use lead, with 1-6 to 1-8 tin added to reduce the melting temperature, and also harden somewhat the lead. Coat the die with whiting and don't turn the lead too hot. If your Babbitt metal is thick and does not flow readily, add more tin. Thirty years' use of this metal, after using zinc, tin, etc., has demonstrated it to be at once *simple, expeditious and reliable, every time*.

Sand moistened with olive oil is of great advantage in that it is always ready for use, not needing to be renewed for weeks or months. The odor from it is not to be compared with that of vulcanizing of rubber.

In view of such results, it is a pity that students should be compelled to devote so much precious time to the making of zinc dies, a method that is perplexing, slow, and uncertain in results, and which should, long ago, have become obsolete. We are told, by its advocates, that the shrinkage of zinc is necessary! If the plaster cast represents the mouth, and I hold that it does, why not fit the plate to that? This the Babbitt metal die will always do, and I find, as a matter of course, the plate fits the mouth, and secures to me the most satisfactory results in what is considered the most difficult class of work, viz.: the heavy, continuous gum work.

In swaging plates, use what is known as *lower* bending pliers for both upper and lower plates, and also the wood and horn mallets. Neither of these tools do any harm to the metal, and greatly aid in the process.

Oil both dies, and if careful to wipe off any base metal that may adhere, and which can readily be seen, there will be no need of putting the plate in acid before annealing, as some teach, but do so *after* annealing, so as to see what may be on the surface after swaging.

Don't hesitate to cut your full upper plate in front and lap it, for while it saves time and annoyance, it also increases the

strength of the plate at the point where there is the most strain, and if the teeth are to be soldered on, there is far less danger of the plate warping than if it has been cramped into an unnatural condition by swaging without cutting.

Learn to use the mouth blow-pipe, even if you should afterward make use of a self-acting one. A blow-pipe should have a large mouth-piece, so as to rest it against the lips and not between them. In order to blow a steady blast, do not let your "wind-bag" collapse, in other words, keep the diaphragm distended all the time, then you can keep up a steady blast with the cheeks, taking in your supply through the nose.

The practice of soldering and finishing the backings before soldering to the plate, is all very well for those who have the time thus to putter. But time is saved and just as good work the result, by a simpler method. Invest plate and teeth in plaster and sand (which is preferable to asbestos, because it is not so yielding in backing up,) and in a sheet-iron ring; use thick gold, say about gauge 24; round the top of each backing and chamfer the edge; split the pins and cut off the surplus with a sharp tool; have the plate clean, and the easiest way to do it is to wash off the wax by dashing on boiling water; use plenty of borax; I prefer the pulverized, wetting it up on slate or glass, putting it on with a stick or brush; cut the solder *small* and put it where you wish it to remain. I use 20 carat gold and 20 carat solder; if your solder is what it ought to be it will flow like water, and leave a smooth surface, needing only to *burr* off the heads of pins. Polish with pumice on a pine stick in the lathe, and brush, and oil. Soft brushes, small sizes, will do the most effectual work, as they *hold* the pumice, while the stiff ones throw it off.

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## THE AMALGAM QUESTION AGAIN.

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BY THOS. FLETCHER, MUSEUM ST., WARRINGTON, ENG.

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It would perhaps be hopeless to refer Dr. Robinson to the experiments and the known results of those who have used amalgam for a lifetime, and who care no more for amalgam than any other filling, except for the good service it does. It is, however,



necessary to take exception to Dr. Robinson's statements, which are *merely statements*, and distinctly contrary to fact. I do not wish to discuss or argue the matter, but when he states that it is "an admitted fact that everything hardened by crystallization must necessarily become smaller in the process," allow me to remind him of the very ancient and well-known experiment of filling an iron bomb shell with water, and bursting it by freezing or crystallizing the water. Did he never hear of a water-pipe being bursted by the same means? Any way, he can easily test for himself with a bottle of water.

The bursting of tubes and of teeth by the hardening of precipitated silver amalgams, is practically as familiar and as well-known, and, although not quite so easy to repeat as the water experiment, is quite easy enough to convince any except those who are determined they will not see.

The experiment he proposes of filling teeth and throwing them in a drawer, would show poorly for almost any filling, more especially for cohesive gold, for the simple reason that teeth, in drying, contract most irregularly and twist completely out of shape.

If Dr. Robinson would clear out his prejudice and make some fair, reliable experiments, his opinion would no doubt help in the crowd one way or the other; but mere statements, which are on their face contrary to well-known facts, are of no use, and do not alter the facts.

[The above paper is on crystallization rather than amalgams, notwithstanding its title. We do not intend to re-open the amalgam question now, as other matters are pressing. Some substances contract and some expand in crystallizing.—ED. JOURNAL.]

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## PRACTICAL SUGGESTIONS DURING DENTITION.

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BY GUSTAVUS NORTH, A. M., D. D. S., SPRINGVILLE, IOWA.

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THIS is an important subject, and one that should interest every dental and medical practitioner, and also parents, or any that have children under their care. They should be instructed in this important branch; and children, during the period of den-

tion, should be under the care of an intelligent instructor. The mother during pregnancy, and especially after foetal life, while the child is receiving nourishment from her, should live according to the laws of nature, eating suitable food to sustain the different elements that compose the osseous structures. A child must have food to build up the system instead of tearing it down, if we wish to improve the present as well as the future generations.

Dentists should use their influence in this great and important work. Parents are often ignorant of the laws of nature, and deprive their children of nourishing food.

How could we expect a tree to grow and bring forth fruit, if deprived of the elements that nature provides for it? Deprive it of the sun, the showers, and rich soil, and it will suffer. The same with the child; if certain laws are ignored it will grow up weak and delicate, and the teeth, in such cases, are apt to be in accordance with the body. Ignorance is frequently the cause of suffering. Children are often brought into existence, and suffer from the neglect of others, and are deprived of the proper nourishment that nature provides. Our profession as a body seems to ignore this great and important subject, which should claim the attention of every intelligent dentist.

A child should have out door exercise, regular baths, and, during the winter months, should be well dressed, so as not to be influenced by the sudden changes. And the most important of all, it should eat suitable food that will build up the system, and thus the present generation can be greatly improved. We have had marked success in this direction in many cases in the past few years. I will simply mention one for illustration. A child three years old was brought under my care for treatment. I found the teeth in a bad condition, the labial surfaces of the superior teeth were wasting away, were very soft, and sensitive; saliva in an acid condition. I filled the cavities or surfaces with a phosphate preparation, and found, by properly questioning the parents, that the child had been deprived of suitable food, that its diet was principally sweetmeats, and it was in the habit of eating between meals, such as pie, cakes, etc., and at meal time, when the family had substantial food, the child seldom ate. I advised a change of diet, and if piece-meals were necessary, give it substantial food, such as beef, eggs, potatoes, milk, wheat, corn, and Graham bread. The diet was changed at once, and proper exercise

was recommended. The child's general health was greatly improved. Two years have passed, the teeth are quite firm, and solid in structure, and no doubt all can be preserved till nature sees fit to throw them off to make room for the permanent teeth, which will be improved by strictly following the laws of hygiene.

Medical men might have much influence in this direction, if they would turn their attention that way; but they neglect the matter, and it is simply left with us for correction.

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## Editor's Specials.

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"Write the Vision and make it plain."

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### OHIO STATE DENTAL SOCIETY.

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DISCUSSIONS—SECOND DAY, FORENOON.

*(Continued from page 97.)*

After the reading of the minutes, and the transaction of some miscellaneous business, the discussions were resumed on "Mechanical Dentistry."

DR. J. A. ROBINSON reported a singular case of a lady, with well-shaped alveolar arches, who claimed that she never had teeth. He did not believe her statement, however. As to methods of fitting plates, he did not believe molding was more accurate than swaging. He thought the excessive absorption of the ridges under plates of vegetable bases was mainly due to the retained heat; and that the injurious effects of rubber were increased by time. He thought metallic plates better for the mouth. He advocated lining rubber plates with metal. He said porcelain work was good when well made, but there seemed to be a prejudice against it.

DR. HARROUN said he could get a better fit by swaging than by molding. He would not advise the use of but a single die, but would warn against over-swaging.

DR. JENNINGS objects decidedly to air-chambers. If the plate fits it is not needed, if it does not fit it is better to re-make it than to rely on an air-chamber.

DR. DORRANCE said that to secure a fit the necessary prin

ciples must be observed. He showed a plate with ridges designed to sink into the mucous membrane, and said the effect of such arrangement is injurious to the mouth. He thought it every way better to make a fit than to rely on such devices. He spoke of the soft rubber disks, and said they are mere suckers, acting exactly like the boys' toy suckers, made of a round disk of leather with a string to its center. When a plate fits, when the adaptation is good, the less pressure the better. In making dies he said the mold is necessarily larger than the model, and a little different in shape, hence a metal that shrinks a little is better for a die. He claimed that metal-lined plates do not relieve the difficulty, as the rubber, though covered, is still there. The metal may conduct heat from the membrane to the plate, but while the plate is a non-conductor, the thin layer of metal will soon be heated.

DR. BERRY spoke of aluminum plates, and said that in some mouths holes would soon be eaten through a swaged plate. He claimed that swaging gave a better fit than molding.

DR. MORRIS approved of air-chambers for hard mouths.

There being some difference of opinion as to the meanings of the terms atmospheric pressure, suction, etc.,

DR. JENNINGS illustrated his idea of atmospheric pressure by two pieces of glass. When ground perfectly true on their surfaces, so that contact is insured throughout, they are held together simply because the atmosphere presses on one side of each, while it does not press on the sides next to each other.

DR. WHINERY said he usually put in a shallow chamber, merely to aid the patient in getting used to the plate. He would have it so shallow that no injury would be done by the membrane eventually filling it. He had made continuous gum for fifteen years. He thought platinum too expensive and too easily broken. He liked gold work, and silver too. In gold work he said it is a good plan to heat the periphery of the plate first, when soldering, and it is not so likely to spring or warp. When the gums are spongy he prefers metal plates. In vulcanizing rubber, if the heat is raised too rapidly, the plate is rendered porous, and such plate will have an offensive odor if worn.

DR. WILLIAMS said he was not quite satisfied with the illustrations of the glass plates, referred to by Dr. Jennings. When a leaden ball is cut smoothly in two, and the fresh surfaces are firmly pressed together, they, too, adhere, and he thought cohe-



sion had much to do with it, and asked if a plate in the mouth does not adhere on the same principle.

DR. J. H. WARNER spoke of the effects of plates. He thought spongy gums are not to be charged to rubber plates. The worst he had ever seen were under gold plates. Sometimes we see teeth attached, not to a plate, but merely to an air-chamber, it being the leading idea of the maker. If members will only think they will recognize that an air-chamber is a cupping glass, and if it does anything to hold the plate in, its effect is only temporary.

DR. BERRY said that to a certain extent we must furnish the public what is demanded, on the same principle that a tailor must make and sell clothes.

DR. J. A. ROBINSON advised scraping out the impression over the harder parts of the mouth. He thought deep chambers aggravate the membranes, but the air-chamber aids the patient at the start. He advised his patients to draw the tongue backward over the plate and swallow, and that exhausts the chamber. Lining rubber plates with metal helps the patient whose mouth becomes spongy and sore under the plates. He did not positively know how, but he knew the fact, like the young man who could say, "One thing I know, that whereas I was blind, now I see." He had made porcelain plates by the hundreds on the Dunn plan. As these plates had to be ground out, the fit was not as good as rubber fits. Satterthwaite had made a porcelain that promised better, as it did not shrink in baking, but like all porcelain it rots or becomes brittle and breaks. He believed we would have to recognize the fact that rubber work has come to stay, and hence he would recommend metal lining to the plates, for the benefit of the millions who will wear rubber.

On motion, discussions on the first subject were closed, and as there had been complaints in past years, that mechanical dentistry did not receive its share of attention, nothing of the kind could be said of this meeting, as it had occupied nearly half the time of the meeting devoted to discussion.

The second subject was taken up, viz. :

#### BEST METHODS OF FILLING ROOTS.

The discussion on the topic was opened by

DR. SIDDALL, who, if we understand him, advised driving a

hickory pin into the canal. (A wild neuralgic paroxysm just then diverted attention, so that we would not like to be held responsible for such a statement. Our attention was arrested by a member asking, "Where is the pulp when you are driving in the wooden peg?" and he very composedly answered, "It is in there, and it's in a tight place.")

DR. HUNTER said various metals had been successfully used in filling roots. He spoke of rosin for the purpose, and raised a laugh, but got better attention as he explained that an alcoholic solution of rosin on cotton fibres was the material used. Dr. Peabody, he said, had recommended leaden wire, which he thought was good in large canals. Even if it penetrates the apical foramen it soon becomes encysted and ceases to irritate. He had used a solution of sandarac in chloroform successfully, but it was very painful if any of it passed through the apex. If the canal is thoroughly filled with any indestructible substance, the work is well done.

DR. J. H. WARNER said if pain is caused by a passage through the foramen we ought to stop, take out and begin anew. He would use red hot iron as soon as carbolic acid. Creosote, carbolic acid, alcohol, heat, etc., coagulate albuminous tissues, and putrefaction is prevented for the time, but it is only postponed. They are not needed if all tissues are removed from the canal, but to leave a portion in, depending on preserving it by these agents, is making a grave yard of the canal. When carbolic acid is used for this purpose, an abscess, sooner or later, is assured. Sometimes air is pushed through the apex and causes pain. It should be let out by a sharp pointed instrument.

DR. J. A. ROBINSON said he would feel almost forced to abandon dentistry if totally deprived of carbolic acid. He treats all alveolar abscesses with it. When there is a fistulous opening in the gum he pumps the acid through the pulp canal till it shows its effects at the opening of the fistula. When there is no external opening, he is careful not to force air through the apical foramen. Would avoid it by using a very fine broach.

DR. HUNTER would not want carbolic acid to go through the apex when there is no external opening.

DR. REHWINKEL said the main thing is to clean out the canal and thoroughly fill it. The material used was of less importance.

The fifth subject, "Oral Surgery," was taken up out of its

course, the afternoon of the second day, for the purpose of hearing a lecture on the subject from Prof. Hamilton. This and the remarks from Prof. Pooley on the same, we did not try to report, as we were not then, if ever, able to do them justice. Besides, Prof. Hamilton's remarks could not be properly appreciated without seeing the morbid specimens which he presented before the Society. Many of you ought to have been there to hear for yourselves; and those of you who could not, have our sincere sympathy for your loss.

#### THIRD DAY.

The third subject, "Plastic Fillings and their Availability," was taken up.

Dr. FRENCH spoke in opposition to the use of amalgam fillings.

Dr. DORRANCE, on the other hand, recommends their use, and remarked that he should dislike to have his name to a testimonial in favor of a thing he would not use. He probably alluded to Dr. French's testimonial in favor of King's Amalgam. But after all Dr. French may be perfectly consistent. He says that he regards King's as the best, and hence if any is to be used let it have the preference; yet it does not follow that he must use even the best of things not good.

Dr. SIDDALL said that the methods of using amalgam fillings are not taught in the colleges. A student may come out of college able to do excellent gold work, yet quite unable to do good amalgam work.

Dr. HERRIOTT corrected Dr. S. by stating that the Indiana college teaches the use of amalgam.

Dr. MORRIS said that according to his observation amalgam fillings last, on an average, five or six years, and gold six or eight years. A dentist had told him that he warranted his gold fillings, and he told him that he did not do himself and the profession justice. He said that gutta percha often saves, but he had no faith in oxy-chlorides though sometimes they last several years. We can't tell the prospective condition of the buccal fluids which, even if normal when the fillings are inserted, may change so as to dissolve or disintegrate the oxy-chlorides. Rapid decay naturally calls for plastic fillings. Some operators cannot make good gold fillings, and such should rely on plastics. He said amalgam has its place in dentistry, as some operators cannot get at distal



surfaces to do good gold work. He thought porcelain stoppers, used with plastic fillings, an advantage.

DR. BROWN said there is a time and place for plastics. Felt foil, he said, is almost a non-conductor. He would use it at the cervical border in connection with gold. He regarded it as aseptic.

DR. WATT referred to the use of Wood's Plastic metallic filling. He had often seen excellent results from its use—had seen badly decayed teeth saved by it for twenty years, and still in good condition. He regarded Hill's Stopping as very valuable. When using it on grinding surfaces, it had been his habit to imbed a fragment of a porcelain tooth on its surface, sometimes grinding depressions in the fragment before adapting it. He explained that felt foil is not in itself antiseptic, but if tin is acted on in the mouth the corrodent is likely to be chlorine, and chloride of tin is antiseptic. He said that from 1855 to 1862 he had done the best filling of his dental career, and in those years he had used only gold and Hill's Stopping. He would acknowledge that he had neglected tin, these years, which he regards as most excellent filling in suitable cases.

DR. J. H. WARNER uses no oxy-chloride of zinc. Hill's Stopping is good, but not durable, but is made more lasting by the process alluded to by Dr. Watt.

DR. DORRANCE referred to two teeth filled in 1828, one with tin and one with amalgam, which are still good.

DR. WATT called attention to the fact that isolated cases must be taken with caution. Their teaching may be deceptive. One of his own teeth was filled in 1845, the day previous to his marriage. Though the filling never was good it remains, and the tooth is still saved. Twenty years ago Prof. Taft said he must re-fill it very soon. Now, it will not do to say, have soft gold foil loosely pushed into your tooth, and go off and get a wife next day, is all you have to do to save your teeth.

DR. SMITH spoke of the chloride of mercury having antiseptic influence, and thought that might explain a part of the preservative powers of amalgam fillings. He spoke of the blackening of amalgams being due in part to chloridation of mercury, but on a suggestion that the mercurial chlorides are white, he withdrew the thought.

DR. WHINERY said that fanatics seem to be a necessity.



They take pride in the success of their special methods, and bring out of them all that is possible, and thus the profession is advanced and its platform broadened. He told of ten tin fillings which he had inserted twenty-eight years ago, and said that lately his son had filled the same teeth with gold.

DR. G. W. KEELY said he could not do justice to all his patrons without plastic materials, especially did he need them for the young.

DR. ROBINSON said he must denounce the doctrine of the exclusive use of gold.

DR. J. TAFT asked what is gained by making a man of straw and fighting him. Not a man in the whole profession, he said, either advocates or confines himself to the exclusive use of gold. All use plastics of some kind, and very many who reject amalgams use tin. How often have we heard to-day that plastic materials are good in their place. So are lice, and bugs, and rattlesnakes. Plastics are good if properly used. One thing may be best for one man, and another for another. Gifts differ. Let each do what he can do best, and it is not necessary to fly off at a tangent as is done by some. He sometimes put gold caps on oxy-chloride fillings, and he had not seen any failures, with a single exception. Sometimes he used porcelain caps as just suggested by Dr. Watt. It is sometimes a good plan to fill large cavities partly full with plastics, and then finish with gold. An exposed pulp should be shielded from contact with oxy-chloride. Had used Hill's Stopping ever since its introduction. It is not merely a refined gutta-percha, as has been stated here; it is hardened by foreign materials that add to its durability. He objected to placing oxy-chlorides and similar plastics at the cervical walls. He had yet his first amalgam filling to make, and did not yet know when he should make it. While not using amalgams himself, he did not denounce those who do. He thought he could always do better than to use amalgams, and so he had not used them. He had kept record of cases for thirty years, and he believed tin had been too much neglected.

The officers elect were duly installed, and the acting President made a most appropriate address to his successor, committing to him the gavel and introducing him to the Society.

After this the President elect delivered an extempore inaugural, more eloquent and appropriate than is usual in such cases.

The President then announced the standing committees, which were ratified by the Society.

EXECUTIVE COMMITTEE.—A. F. Emminger, J. I. Taylor, C. I. Keely.

MEMBERSHIP.—D. R. Jennings, Wm. H. Todd, J. F. Siddall.

PUBLICATION.—J. H. Warner, F. A. Hunter, H. L. Ambler.

ETHICS.—L. Buffett, J. C. Whinery, C. H. Harroun.

VOLUNTEER ESSAYS.—E. F. Sample, F. H. Houghton, E. G. Betty.

After the transaction of some miscellaneous business the Society adjourned to meet in October, it being the general feeling that a more pleasant season of the year would be in many respects more desirable than the gloomy month of December.

In this notice of the State Society it has not been the aim to give a formal report of the discussions, but rather a gossip account of the meeting calculated to make absentees wish they had been present, and to induce them to be present at future meetings whenever practicable.

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## FUNNY.

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"Ten days and nights, with sleepless eye,  
I nursed that wretched man;  
And since I've never dared to write,  
As funny as I can."

BUT the experience of the autocrat of the breakfast table was enjoyment itself compared with our agonies. Writhing in pain, struggling with poverty, infirmities of age coming at the gallop instead of creeping on, the grave yawning before us, Grim Death, with his stem-winder and his self-binder, ready to harvest us into his garner, not even giving us a handkerchief to drop as a signal for him to spring the trap; face wrinkled and furrowed with sorrow and care, eyes sunken, locks grey, knees tottering and smiting together, lonely and forsaken, and yet the *New England Journal* charges us with having an "inclination for making fun," so much of an inclination that it does not like very much to dispute with us; and things of whose nature we are ignorant, which, however, it charges on us, it says "belong to the funniness to which, unfortunately, now and then Dr. Watt yields too much." And worse still, it says that fun, or the inclination to make it, is not scientific. That is startling. We had regarded

fun and scolding as the exact sciences. And the proof of our "funniness" it finds in the long, sombre Jeremiad, which we put into the January *Journal*, after having read it before the State Society at Columbus. Once before we were similarly accused. Our little granddaughter, when three years old, had diphtheria. When but partially convalescent we thought a certain local application to her throat would be beneficial. Of course it was not pleasant for her. Amid her struggles we remarked to her mother that we hoped this would be the last application needed. Next day she said, "Mamma, did you hear grandpa say may be he would not do that any more? Isn't he a funny old fellow?" No comparisons.

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### THOUGHTS FOR OUR YOUNGER BRETHREN.

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WHEN a small boy it was our lot to fall from a height among weeds and bushes, and to be so hurt as to remain for a time unconscious. When but partially revived, being unable to move and bewildered in mind, we saw a number of spider webs which had been spun above and around us. To our depraved vision they looked like ropes, and our impaired judgment came to the conclusion that we were securely tied and totally unable to get out of the difficulty. Lapsing back into unconsciousness for a time, a new awakening found us able to take in the true situation, and to realize that there was nothing to do but to get up and go on with proper business.

Our condition then is an illustration of many of the incidents of practical life. A young, or possibly an older professional man, finds himself lacking in strength and energy, and he concludes that all things go against him, that he is tied down by the force of circumstances till he is practically helpless, when, in truth, if he will but arouse himself he will find that mere cobwebs are holding him, and that his own energy is the only element lacking to insure professional prosperity. Let all, especially the young, wake up to active life and duty, and all will go well. Let no hour pass unimproved. Sleep soundly, when sleep is needed, then work, or study, as if contending for a prize. Let there be no waking hour that you do not learn something, or do something useful. We often find a young professional brother express-

ing a wish that he possessed the knowledge of Dr. Blank, while we can well remember when Dr. Blank's attainments were inferior to the present acquirements of his admirer. But *wishing* will not bring him up to the level of Dr. B.; yet, industry and energy will. Let no one permit himself to be tied down by cobwebs. Break away from everything that holds you back. Mark out a course of study and experiment, and pursue it to the end—not a course that it would be nice to follow, but one that you will pursue as certainly as health and life permit.

Only a few days ago, we found a state not unlike the spider-web imprisonment. Getting around after an attack of fever, with nerves unstrung and brain oppressed with the remains of the febrile poison, we felt wholly unfit to get out this number of the JOURNAL. We tried to write, but the pencil would not go. The fingers were willing, but there was no power behind to direct them. In disgust, for the first time since the JOURNAL sprang into existence, pencil and paper were thrown aside. Manuscripts were unread. In short we rested, and only rest was needed.

Sometimes when an editor is resting, his co-laborers, like the spiders, spin cobweb criticisms all over and around him. And spiders regard their own webs as exceedingly strong cords; and the editors do, too, perhaps. And the victim, while his brain is still fever-laden, may regard them as strong also. He may be discouraged, and fear that he has been snared and taken while all unconscious that the work had been going on. But as he gains strength, and finds that his fetters are merely professional cobwebs, he feels better. We know he does. Why shouldn't he?

The fact that we have lately received an unusual number of rather desponding letters from our younger professional brethren, explains the tone of this and another special.

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## THE NASCENT STATE OF CHEMICAL REAGENTS.

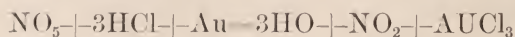
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SOME, for want of due information, fail to know exactly what is meant by the nascent state of a chemical agent; but few go so far as to display their ignorance by sneering at the thought of regarding it as an important consideration in reference to chemical reactions. The derivation of the adjective indicates that the state of, being born, or formed, or liberated, so as to be thoroughly



individualized, is the idea to be attached to a chemical body said to be in the nascent state. Perhaps the meaning can be gained by illustration more readily than by definition. Take a simple case: When charcoal is burned, oxygen unites with the carbon, and carbonic acid is the result. In its state of formation, by the union of its components, it is said to be nascent. On the other hand, chalk or marble is lime in combination with carbonic acid. If to the chalk or marble sulphuric acid is added, the carbonic acid is liberated, and in its liberation is also nascent, and has the same chemical peculiarities as when so rendered by the first mentioned process.

It is universally recognized by chemists, that chemical reagents are more energetic in the nascent state; that is, their affinity for other matter is stronger. Why this is so we do not propose to explain. Lately, however, some one, not a chemist, of course, has said something like this: "If we put teeth in hydrochloric acid \* \* \* \* the acid always attacks most actively the tooth, just as lively as if it was nascent, or evanescent, or opalescent." Now take an illustration, very familiar in the chemical laboratory, which is somewhat like the experiment proposed above, and which may give more light on the question at issue. Gold is dissolved in aqua-regia; but, after all, chlorine is the agent that dissolves the gold; and the chlorine that does it comes entirely from the hydro-chloric acid in the aqua-regia. But if gold is immersed in hydro-chloric acid, it has no action on it. And further still—though chlorine is highly soluble in water, a saturated solution of it makes no impression on gold. Now why? Simply because the chlorine is quiescent, or *passive*, as some prefer. Then why can the chlorine, which is a constituent of the hydro-chloric acid in aqua-regia, dissolve gold? Simply because the chlorine is nascent, and therefore not in its passive condition. By virtue of the affinities developed when gold is placed in aqua-regia, the chlorine is separated from the hydrogen, and the very instant it lets go the hydrogen it finds the gold, and combines with it. Those familiar with chemical equations can at once understand the reactions by a look at this formula:



Those not familiar with chemical notation can understand this formula with but a little explanation. A large figure to the

left influences all the symbols to the next sign. A small figure to the right affects only the one next to it. The left side of the equation expresses one equivalent of nitric, three of hydrochloric acid, and one of gold. The right represents three equivalents of water, one of nitric oxide, which escapes as a gas, and one equivalent of terchloride of gold, composed of one equivalent of gold combined with three of chlorine, and it, being a soluble salt, is dissolved with the water. This is all; yet some talk bombastically about the "marvelous and mystic powers of the princely aqua-regia." The point to be noticed is, that though the gold is readily and rapidly dissolved by the chlorine, under these circumstances, it might be immersed till dooms-day, in a watery solution of the same quantity of chlorine, without injury.

We sincerely hope the above illustration will make the matter plain to some who are earnest seekers after knowledge, and who have been asking for light in this direction.

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### A SHARP REVIEW.

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WHILE cultivating a close intimacy with our invalid chair during the past few weeks, we had to neglect our exchanges to some extent; hence, only a few days ago we picked up *The Medical Record* of New York for January 20th, 1883; turning to *Reviews and Notices*, we found a remarkable notice of the late work of Dr. Heitzmann, which we can but designate as very severe on the author, if the statements are true, and the insinuations are well founded, but most fearfully severe on the reviewer, if they are not. We have not examined the book, and would say in all candor, that we presume our range of reading has not been such as to enable us to judge accurately in reference to at least some of them. If the charges are true, the author is verily guilty, and deserves to be exposed, if they are false, the journal making them is guilty of the grossest injustice, as well as of untruthfulness, and this should be known, that it may be exposed, and the good name of Dr. H. vindicated. If guilty as charged, he is entitled to no sympathy, if not, he is entitled to much, while his reviewer can scarcely be treated according to his demerits. That justice may be done to all, and that the guilty may be identified, we

give the notice as it has appeared on pages 75 and 76 of the *Medical Record* for January 20th, 1883 :

MICROSCOPICAL MORPHOLOGY OF THE ANIMAL BODY IN HEALTH AND DISEASE.

By C. HEITZMANN, M. D., late Lecturer on Morbid Anatomy at the University in Vienna, Austria. With 380 original engravings. 8vo, pp. 849. New York : J. H. Vail & Co., 1883.

UNDER the above title Dr. Heitzmann has collected and published some twenty-two chapters of varied matter, intended to be illustrative of the experience acquired by "ten years' intense labor." A more curious medley of strange assertions, premature conclusions, and extravagant theories it has rarely been our lot to peruse. At times we feel constrained to believe that the author is merely an artful satirist, so keen and rich is the quality of his humor. But there are other passages in the book that present the stolid front of undisputed and indisputable fact, where real science is not made to blush in the presence of pseudo-scientific posing.

Dr. Heitzmann evidently felt unequal to the task of writing single-handed so great a work on microscopy. He has accordingly secured the invaluable collaboration of such well-known histologists as Schöney, Hassloch, Hoeber, Elsberg, Tauszky, Frankl, Müller, Johnstone, and other eminent scientists. It is perhaps not surprising, therefore, that the result achieved by the combined efforts of so many able and competent observers should be in many respects a truly brilliant one.

The preface is a masterpiece in its way. It must be read and studied from beginning to end, in order to be fully appreciated. Dr. Heitzmann, it should be remembered, scored a brilliant fiasco in Europe as regards the recognition of his flights of fancy. But then he informs us that "European microscopists are, to a great extent, prejudiced by the teachings of the older masters." The new master has "received in New York much encouragement from students and co-workers." He has also "been magnanimously supported by a friend, who is not a medical man, but a prince in character and wealth, and who surpasses most European princes in that he will not allow me (Heitzmann) to inscribe his name upon the dedicatory page." But in addition to this interesting, important, and withal graceful personal explanation, "The United States," we are told, "are ahead whenever new ideas of practical importance are to be acknowledged." Now, as regards histology, America is ever ready to concede to Europe a well-



earned pre-eminence. Moreover, even America is by no means prepared to accept Heitzmann's morphological vagaries as the gospel of scientific truth in microscopy.

Most of the articles in this volume have already appeared elsewhere, and not a few are translations of papers published in German years ago. In all essential features, the author still adheres to his former peculiar views on protoplasm, or, as he now prefers to call it, "bioplason." But the network of living matter, which he holds to be the morphological foundation of all animal life, is by the vast majority of competent microscopists accepted only as the reticulum of cellular death.

It may not be amiss to illustrate by a few quotations the author's style and some of his hasty assertions. Tearing and teasing of tissues he utterly condemns as a most objectionable method of preparation. All working histologists know, however, that it is an indispensable procedure for many examinations, and that perhaps no other single method has yielded so many and such practical results as this one. Glycerin is the only liquid which he fully recommends for permanent mounting. This again runs counter to universal experience, which has found in the various balsams the best means for permanent mounting. Glycerin is of special value for hasty and temporary mountings. In this connection Heitzmann also writes (p. 81) as follows: "The process of mounting in glycerin is simpler and easier than any other method, and, if all precautions mentioned are carried out with care, no change," etc. "True glycerin specimens need more careful handling than balsam specimens." The contradiction contained in these statements is apparent at once. "Ammoniacal carmine solution is the most satisfactory for staining specimens obtained after hardening in chromic acid." Most histologists have found hæmatoxylon, eosine, and other dyes far superior to carmine for chromic acid specimens. "After Elsberg's at present almost generally adopted designation, we shall term the molecules of the living matter 'plastidules'" (p. 13). So far from being generally adopted, Elsberg's designation is as little known as his competency as a histologist is widely recognized. On page 17 this well-known laryngologist is also preferred to Darwin and Hæckel as a successful theorist on protoplasm. And here we may mention that although Heitzmann repeatedly asserts that he has



discarded the term protoplasm altogether, he almost constantly employs it throughout the volume.

By looking at a pus-corpuscle Heitzmann is able to tell "whether the person from whom the pus comes is healthy and strong, or weakened by chronic disease, as tuberculosis" (p. 32.) We doubt whether any conscientious histologist would dare to imitate this wild feat. But in hundreds of such examinations (p. 59) Heitzmann has diagnosed constitutional conditions from the appearance of the network in leucocytes. And as he modestly adds, "I was right in every instance; not one mistake has occurred." And again, "To-day my hopes have turned into accomplished facts," meaning his pus-corpuscular hopes, expressed some three years ago. "Thus I have arrived at a point of perfection which allows me to tell the constitution of a person without knowing anything of his former life" (p. 60). "The bioplasson is one uninterrupted mass throughout the body, and is connected from the top of the head to the heels, in what we call tissues" (p. 61). "The animal body, as a whole, is one protoplasmic mass, in which are imbedded a relatively small number of isolated protoplasmic corpuscles, and various other non-living substances" (p. 131). Now all this uninterrupted mass strikes us rather as an uninterrupted and unmitigated mess. Moreover, it is the veriest physiological heresy to assert that the healthy normal body contains dead ingredients in a morphological sense. All non-living particles would necessarily act as foreign bodies in healthy tissues or organs. On page 135 we learn that the "cell-theory had to be abandoned in the light of my investigations." As a matter of fact this theory is still largely dominant, and certainly no more acceptable explanation of various histological and pathological phenomena has yet been advanced. Biologists will doubtless be pleased to know that "on cartilage-tissue have mainly rested, for the last forty years, our biological views." (p. 141).

It is clearly impossible, within the limits of the present notice, to particularize more fully the numerous extravagant notions and eccentricities contained in the pages of the work before us. One is surprised also at the spirit in which it is conceived and written. For nobody can fail to read between the lines the bid for laboratory students, and the too evident desire at self-advertisement. Witness only the following selections: "A few months"—nay, a few weeks—thorough study under the direction of a reliable

teacher will suffice to enable every one to see what really can be seen in the plastids," etc. (p. 60); "Life insurance should be based upon microscopical examination" (p. 61); "Marriages should be allowed in doubtful (?) cases only upon the permit of a reliable microscopist" (p. 61); "Many examinations, etc., have enabled *me* to reach a certain degree of positiveness in the diagnosis of the diseases of the genito-urinary tract. The microscopic analysis of the urine also requires a thorough study, which, however, is greatly facilitated by the guidance of a reliable and experienced teacher."

In justice to the author it must be said that his work is not without redeeming features. Many of the drawings are beautifully executed, and cannot fail to be admired. Practical suggestions as to methods of preparation are found among others which are the reverse of this. Although no attempt at a systematic presentation of the facts of normal and pathological histology has been made, nevertheless scarcely a living issue in these branches is left untouched. Here and there some really valuable expression of opinion may be found—valuable rather in its stimulating further thought and study than in direct worth. In their present status Heitzmann's notions may be likened to some turbid solution, in which time and calm repose may yet allow the formation of clear crystals representing scientific thought and truth. It is to be hoped that this much-needed time and repose may be given before a second edition of Heitzmann's book appears.

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## CORRELATION OF FORCE. AND OTHER THINGS.

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PERHAPS the plural would sound better. If the reader thinks so, let him say Correlation of *Forces*. The greatest manifestation of force ever displayed in the universe was when "He spake and it was; He commanded and it stood fast." "His word was with power,"—force; and, after all that we observe, and name from their phenomena, heat, light, affinity, cohesion, electricity, etc., is it not probable that the divine will, with its correlations, is the sole force of the universe? Most of the ordinary events of every day life illustrate the principle of correlation. Before the days of friction matches a common mode of starting a fire was seen in the use of a flint, a piece of steel, and a tinder box. Begin

almost where you please in considering this, and you find a beautiful illustration of the correlation of forces.

Start with the nervous force of a depraved nerve asking for a narcotic, a change to a different kind of nervous force manifested by will, a still different kind of nervous force, which is at once changed into mechanical motion causing friction of the steel against the flint, a change to electricity, next to affinity, and the particle of steel takes oxygen from the atmosphere, affinity changed to heat, this to light, and all this to make a small particle of anvil dust,—black oxide of iron, or worse, to have affinity, heat, and light, in relation to the tinder that the filthy pipe, or the poisonous cigar may be lighted to gratify that demoralized nerve loop whose depraved demand was the first link in the chain of correlation.

Or think of a friction match as it is put to use—nervous force changed to mechanical motion, electricity, affinity, heat, light. This seems to be analogous to the changes in matter. Its properties may be all changed but none of it can be destroyed. Nothing is lost. And so in the changes of character in force, nothing is lost.

And the reader may think this has but little to do with dentistry, and he may be right. We are not prepared to say, as we have heard said of things still less practical, that if any one who has not mastered these basal principles till he can shake them from his finger tips, has received compensation for professional services, he has handled unclean money with defiled hands. But it is rightfully expected that a professional man shall know something more than merely the dry details of study necessary to guide him in ordinary practice. A narrow-minded man fails to make a favorable impression on his associates, and accordingly fails to gain their patronage. So, even if not impelled by higher motives, his own self-interest should lead him to a diligent study of general, and especially of collateral science. We cannot expect that those advanced in years will yet make much progress in collateral studies; but the young and middle aged should give all diligence to store their minds with useful knowledge of a kind that will, if not directly, at least remotely, throw light on the studies necessary to a successful practice of their profession. Let novels and magazines mostly rest on the shelves of the library, while the text books and periodical literature of the profession are care-



fully and thoroughly mastered. Great attainments are gained only by great diligence in study. The day that something useful is not learned should be recorded as lost, and the utmost diligence and earnestness should be called into requisition till the loss is made up.

And even though elementary or collateral education may have been neglected in early life, it does not follow that there need be either failure or discouragement. A man now prominent in the dental profession began the practice of dentistry when so illiterate that he could scarcely read; and he could not write a paragraph without making more mistakes than there were lines in his composition. But he went diligently to work, studying as if for a prize, and in a short time he had few superiors as to professional attainments, among his brethren, and though he finally graduated on a most accurate examination, he continues his habits of study to this day. He has been heard from often through the journals and in the societies, and was a very successful teacher for a time in one of our dental colleges. But the idea that we wish mainly to enforce is, let the thoughts be accurate and energetic. Let the attention be undivided. If an idea presents itself it should be thoroughly mastered, fully understood in all its bearings before its dismissal. An idea but half understood proves an instrument of weakness. The brain is not developed by shallow thinking. Let every thought have the undivided and most vigorous attention the mental powers are capable of giving it.

A hint to young, or inexperienced writers may not come amiss in this connection. If interrupted, stop at once, even though in the middle of a sentence, or in the middle of a word. Then wait till there is little or no probability of interruption before attempting to resume. The unfinished word or sentence will prove so suggestive that the mind will at once resume its action as if no interruption had occurred. On the other hand, if an attempt is made to finish the sentence or paragraph under construction, the attention is divided between the subject discussed and the source or cause of the interruption; and as the mind cannot, at the same time, act vigorously in the two directions, it follows that the mental faculties are weakened rather than strengthened by the process.

When Robert Burns was about to give good advice in his



"Epistle to a Young Friend," he used these words, or something like them :

"But how the subject theme may gang,  
Let Time and Chance determine;  
Perhaps it may turn out a sang,  
Perhaps turn out a sermon."

Though time and chance have determined the course of this paper it is neither a song nor a sermon. Its history is simple : Feeling fatigued and feeble, we had indulged in idle revery for an hour, with feet to the fire and head reclining on a chair back, the subject of our meditation being the lack of close thought manifested in the writings of so many. On arousing, we read from a book which had been resting astride of our forehead, this sentence : "If I bring the blade of my knife in quick, sharp, contact with another substance sufficiently hard and brittle, heat and light are made evident to the senses, as in the use of the flint and steel."

A thought flashed up : what is the necessity of brittleness in the object against which the blade of the knife is brought? The experiment is more likely to be a success if it is not very brittle. Nothing in the spark comes from it. It needs hardness, not brittleness. And heat and light are not all that is "made evident to the senses," as any one can learn from the globule of black oxide that affinity was concerned in the phenomena. I reached for my tablet and penciled this ; and now its existence is as well explained as was that of Aaron's calf. He said of the gold the people gave him : "I cast it into the fire, and there came out this calf." So here's your calf ! if you can tolerate a camp phrase

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## Correspondence.

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"I charge you that this epistle be read."

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DR. GEO. WATT.

*Dear Doctor* :—Pardon the familiarity of thus addressing you, but I have read from your "scientific pen" so long, that I feel as though I had known you personally equally long. To be brief, and not trespass too long upon your valuable time, I wish to state a case now in my charge, which thus far has not yielded

to my treatment. Patient nine years old, and of scrofulus diathesis, has for 12 months been suffering from the annoyance and pain incident to a constant flow of pus through a fistulous opening in the cheek of the lower jaw, just under the first molar tooth. When the case was first brought to me, adhesive plaster covered the opening. I, of course, removed it, (giving instructions not to replace it), and as was expected, pus flowed freely down. A probe was introduced, and after careful examination was satisfied that no necrosis or caries of the bone existed. The track was carefully syringed with tepid water, and then with a mild solution of carbolic acid and glycerin, in tepid water. The wound, or rather the fistulous opening, was carefully dressed with absorbent cotton, and a light muslin bandage lightly drawn over the head to keep it in place. A syringe was given to the patient's mother, together with the directions as to the quantity of acid and glycerin to the ounce of water, with instructions to syringe well, but carefully, every night and morning. This has been going on for two weeks, during which time I have not been able to see the patient, since she was brought to me from a distance, but advices from her father indicate only a slight abatement of the discharge, but stating that the patient was, and had been ever since the commencement of the treatment, free from pain. She is to be brought to me again on the 22d. Would you advise the use of aromatic sulphuric acid, diluted, or simply a strong solution of carbolic acid and cauterize the track? This treatment, of course, is on the supposition of their being no caries or necrosis of the bone, of which I am thoroughly satisfied. Small pieces of the alveolar process (two in number) passed out soon after the extraction of the sixth-year molar (the process having undoubtedly been fractured during the extraction of the tooth by a physician). Since then no exfoliation has taken place, and the bone seems to be healthy. The extraction of the tooth was undoubtedly the cause of the trouble. Let me state in connection with the above, that I had a similar case not long since, with which I was entirely successful, after pursuing the same course of treatment, and I will also state that I can generally easily detect necrosed or carious bone with my probe.

Now doctor, if I have asked you more than you care to answer, you can only exercise that virtue which from your writings I am sure you possess—*charity*, and thus forgive. Trust-

ing I have not wearied you with this long epistle, I beg to subscribe myself,

Very respectfully yours,

ISAAC N. CARR.

[Will somebody tell Dr. C. all about this case?—ED. JOURNAL.]

*Editor of the Ohio State Journal of Dental Science.*

THE Central Illinois Dental Society held their first semi-annual meeting at Wenona, on Tuesday, Jan. 9. Dr. Frank Marriner, the President, called the meeting to order promptly at 10 A. M. After reading the minutes of last meeting, by the Secretary, the Chairman of the Executive Committee, Dr. Moody, reported the following programme: Dr. G. Newkirk, a paper on "The Dental Office;" Dr. Frank Marriner on "Random Thoughts;" and C. R. Taylor a paper on "Inflammation." The papers were well received and fully discussed. The following dentists were in attendance: Drs. Marriner, Moody, Newkirk, G. W. Gray, Schofield, Hobert, Fishbourn, A. G. Gray, and Taylor. The society adjourned to meet in El Paso on the 2d Tuesday in July. A request was made that the OHIO STATE JOURNAL print a notice of the meeting. On the morning of the meeting the thermometer registered 30° below zero, keeping some away from the meeting. The society was organized last July.

C. R. TAYLOR, Secretary.

## In Memoriam.

At a special meeting of the St. Louis Dental Society, held on January 15th, 1883, the following resolutions were unanimously adopted:

WHEREAS, Dr. Henry Barron, one of the oldest and most highly esteemed dentists of this city has departed this life; therefore,

*Resolved*, That it is with sincere regret that this Society learns of the death of Dr. Barron, who, as a professional man and a citizen, has ever been held in the highest regard. He was affable, and kind, and industrious to a degree that has probably shortened his days. In his death our profession has lost a most

worthy member, and the community a deserving and most excellent man.

*Resolved*, That a copy of these resolutions be sent to the family of the deceased, to the daily papers, and to the dental journals for publication.

C. W. SPALDING,  
W. M. N. MORRISON,  
N. C. STARK,  
*Committee.*

Copy attest :

JAS. W. WHIPPLE, *Rec. Sec'y.*

JOHN G. HARPER, *Prest.*

It is with sincere regret that we hear of the death of Dr. Barron. From a pleasant acquaintance in the long ago, the editor of the JOURNAL is able to bear testimony that the above resolutions are not in the least flattering. Language could scarcely commend Dr. B. too highly. One by one we go. Who next?

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## Societies.

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"Wherewith one may edify another."

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### ALABAMA DENTAL ASSOCIATION.

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THE fourth Annual Meeting of the Alabama Dental Association, will be held in Montgomery, Alabama, on the second Tuesday in April, 1883.

All are cordially invited, and an interesting programme may be anticipated.

Montgomery, Ala. E. WAGNER, D. D. S.,  
*Secretary.*

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### MISSISSIPPI VALLEY ASSOCIATION.

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At Cincinnati, March 7th, 8th, and 9th.

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#### SUBJECTS FOR DISCUSSIONS.

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1. Nervous and muscular affections dependent on dental irritation.
2. Etiology and pathology of dental caries; treatment by filling.



3. Periodontitis and alveolar abscess; pathology and treatment.
4. Prosthetic dentistry; restoration of features and expression—how best accomplished.
5. Fitting artificial crowns to roots of natural teeth—new and old methods.
6. Reports of case in practice.

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## ANNUAL COMMENCEMENT OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF MARYLAND.

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THE Annual Commencement of this Dental Department will be held at the Academy of Music, Baltimore, March 15th, 1883. The dental profession is respectfully invited to be present.

FERDINAND J. S. GORGAS, M. D., D. D. S., *Dean.*

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## BOARD OF DENTAL EXAMINERS OF ALABAMA.

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THE State Board of Dental Examiners of Alabama will hold their third Annual Meeting in Montgomery, Alabama, commencing the second Tuesday (the 10th day) in April, 1883,—at the same time and place with the Alabama Dental Association. All parties desiring to practice dentistry in Alabama must make application for license on the first day of the session.

T. M. ALLEN, D. D. S.,

*Eufaula, Ala.*

Sec'y B. of D. E. of Alabama.

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## Books and Pamphlets.

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“Of making many books there is no end.”

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A PRACTICAL TREATISE ON OPERATIVE DENTISTRY, by J. TAFT, M. D., D. D. S., Professor of Principles and Practice of Operative Dentistry, in the Dental College of the University of Michigan. Fourth edition. Revised, with one hundred and thirty-six illustrations. Published by P. BLACKISTON, SON & COMPANY, Philadelphia. Price: Cloth, \$4 25; Sheep, \$5 00. For sale by the publishers and by RANSOM & RANDOLPH.

It is gratifying that a new edition of this standard text book is demanded. No one expects it to lose its identity by appear-

ing in a new edition, and no one wishes it to do so. Consequently we may say it has been substantially before the profession so long that a minute review of it appears to be quite uncalled for. Our delay in noticing it has been caused, not by any lack of interest in the book, its author, its publishers, or the profession. A febrile attack made it necessary to neglect something, and we tried to select such things as would suffer least by the delay. The author tells us that the changes in this edition have not been so great as were thought necessary in a preceding one, still, by omissions and additions, it has been much better adapted to the present wants of the profession. Superseded instruments are generally omitted, and more modern ones are introduced.

The author's views on caries seem to have been but little changed by the flood of essays and contributions from the advocates of the germ theorists, and in this respect we think he will have a majority of the best thinkers of the profession on his side. We believe the book is recognized as a text book in all our dental colleges. This is well. As the work was originally prepared with reference to the wants of students, the teacher of the present day would find himself crippled by the want of it. A fuller work than it would be, perhaps, more satisfactory to the general practitioner, but, after all, it is hardly practicable to have every thing wanted in a single book. The author, while competent to handle many subjects omitted, or but partially discussed, and which some would like to see in a text book, probably regards his present arrangement as best adapted to those for whom the work was mainly prepared. The wonder is that, with his time and strength overtaxed as they are with other work for the profession, the author has had the ability to give the profession a work so valuable.

It is no part of our purpose to minutely discuss the character of the present edition. In general its teachings are sound and clear. As usual, the publishers have done full justice to the work.

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PHOSPHORUS AS A PREVENTIVE OF CONGENITAL MALFORMATION.—A correspondent of the *British Medical Journal* writes that he had attended a young married lady in three successive confinements. Each time the mother gave birth to a child more

or less malformed, having club-feet, twisted hands, spinal curvature, etc. The lady came to him again in despair, saying that she was pregnant for a fourth time, and begging him to do something for her. He put her upon a preparation of phosphorus, and a healthy, well-formed child was born in due time. The phosphorus was then discontinued, but, as lactation failed to appear, the drug was resumed. Milk was then secreted in abundance and of good quality. On the occurrence of a fifth pregnancy the phosphorus was ordered again, and with the same results. The idea of giving the drug was suggested by the reports of its success when given to mares which threw malformed foals.—*Medical Record*.

Is it not possible that similar treatment might prevent the defective development of the dental organs? We have full confidence in ante-natal treatment in reference to the teeth, as well as for other organs, and we practiced accordingly.

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CREMATION IN FRANCE.—Coincident with the efforts of the British Medical Association to popularize cremation in England, a society for the furtherance of this mode of mortuary observance has been organized in Paris. The object of the society is to secure government recognition of cremation as a legal form of burial. The society has already received enough promise of support to ensure its success. The annual subscription is ten francs for the first year, and five francs after that.

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THE following item in regard to Samuel Piercy, the actor, who died of smallpox a short time ago, is copied from the New York correspondence of the *Philadelphia Press*:

He was one of a half dozen intelligent men I ever knew to be influenced by the crazy howls of the anti-vaccination fanatics. Jebb and Bergh, and the rest of the mistaken lot, had managed to convince him that the risks lurking in the preventive were worse than the dangers of the disease. Before leaving New York, a few weeks ago, he laughingly rejected the advice of friends who urged him to be vaccinated. He was a convert to the views of Jebb and Bergh, and he paid the penalty of martyrdom.—*Michigan Medical News*.

# OHIO STATE JOURNAL

—OF—  
DENTAL SCIENCE.

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## Contributions.

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"A word fitly spoken is like apples of gold"—SOLOMON.

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### PERIODONTITIS—CAUSE AND TREATMENT.

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BY DR. J. CAMPBELL, OF BLOOMINGTON.

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(Read before the Illinois State Dental Society, May, 1882.)

*Mr. President and Gentlemen:*

I am well aware of my inability to advance to you anything new upon the subject of this paper, nor do I expect to offer any special new methods, as my usual practice is that of years past, and what I may say here is not expected to meet with approval of all, especially upon a subject that all dentists are, or should be, familiar with. No difference what habit or custom does in all business or science of whatever kind, we find men contending radically for different views; so in the dental profession, he who gains special knowledge from all sources should know where he stands. We care not what his customary practice may be, it is well this is so. I do not expect to promulgate any infallible ideas about diseases and their treatment, or advance any new operations, or introduce any new medicines. But it may be well to glance over the theory and practice of the more prominent



methods of dealing with the disease of the dental sockets, and see if we can gain some new ideas; if not, we may become more familiar with the treatment of abscesses, that I may add a mite of interest, if possible, to the meeting, by a short history of my experience and observation of the disease under consideration. The caption of the paper embraces a much greater range of thought than we propose to traverse, even if we felt able to do so and time would permit.

Alveolar dental peridentitis, or perhaps more properly, periodontitis, is, as its name signifies, inflammation of the investing membrane of the root of a tooth; we then propose, as briefly as possible, to describe the origin and progress of the disease from its beginning to its end, either by subsidence, resolution or alveolar abscess, with or without a fistulous opening, and the proper treatment to bring about either of these results, and in time, a restoration of the parts to a healthy condition. The lining membrane of the alveolus, if it be not the same (the periosteum), must be involved, as two tissues so closely connected (if there be two) must sympathize with each other to a degree that will obliterate practically all theoretical distinction. Spence Bates says there exists in the dental periosteum two distinct membranes, one covering the alveolar wall (periosteum), the other surrounding the root (periodontal tissue). There may be a difference existing between the alveolar and the cement portion of the periosteum, but we are not ready to believe the two parts are separate; they form one and the same membrane, constituted by the same element in all its thickness, unless it be in different stages of evolution. If we cannot demonstrate satisfactorily the osteogenetic function of the alveolar dental periosteum, we can, at least, say to a certainty its office is the nutrition of the organ it surrounds. Traversed by numerous vessels, it supplies to the cementum the elements of nutrition; it comes to the support of the function of the pulp, and when this is devitalized, it supplies its place in part, at least, and secures the nutrition and preservation of the tooth. Through the intermediation of the periosteum there is an exchange of material sufficient for the preservation of its function. Periodontitis may be either acute or chronic; let it be either, it may exist in any degree of severity and move to its results with greater or less rapidity. It is common to speak of it as acute or chronic, though the dividing line cannot be exactly defined. But

in order to a successful treatment of any disease, the practitioner must first find the cause that produces it, and an intelligent understanding of the means for the removal of the cause as well as the remedies for the auxiliary treatment.

To mention a few of the many causes which produce periodontitis:

First. Too large applications of arsenic for destroying the pulps, or arsenic coming in contact with periosteum, causing inflammation. Too rapid wedging to make space for filling. Again, from false occlusions of the jaw, producing inflammation in this membrane; for instance, over filling, bringing the entire pressure of the jaws upon a single tooth. Salivary calculus insinuating itself between the gums and necks of the teeth causing inflammation in the investing membrane; but probably the most frequent one, and of most importance to the practitioner, is dead and decomposing pulp tissue. Periodontitis originating from any of the above causes is the same in character, probably varying somewhat in degree. The first symptoms are uneasiness of the tooth, which, in some cases, is extremely difficult to locate, followed by soreness, which is made manifest by a dull throbbing pain, tooth elongated, meeting its antagonist before the others meet. If inflammation is allowed its course at this point and not arrested by some local or anti-phlogistic remedy, swelling supervenes, more or less violent, resulting in disintegration of tissue, the broken down festering mass forces a channel to the surface giving temporary relief; inflammation having reached the suppurative stage, we have what is commonly known as an ulcerated tooth. Let us see what is the cause, and perhaps we may then be better able to comprehend a proper remedy. Inflammation, then, being a morbid condition within itself, is a part of the process of restoration; the diseased part is fed with an increased flow of blood, the fluid part containing just what is needed for building up new cells. In extracting teeth many of you, no doubt, have brought away a sac adhering to the point of the root, a diseased tumefied mass. This mass is claimed by some to be a pus secreting sac, others say that pus is not a secretion. But we do know pus is the product of suppuration consequent on inflammation of cellular tissues. Plasma, the fluid part of the decomposed blood, not giving sufficient life owing to morbid action, fails to build up new tissue. But if nature should furnish

the diseased part a sufficient amount of vitality, the morbid part would be built up into living cells and become living tissue. But if inflammation is so great that new tissue cannot be formed the inflammation must first be subdued; then the point upon which the treatment rests is the forming of new cells or cell building. After extracting a tooth, if you will notice, coagulated blood will be the first deposit in the cavity, and the lacerated margin of the gum will look red and inflamed. The clotted blood soon sloughs out, and the cavity is filled with a whitish curd or coagulum, which gradually changes into a harder jelly-like substance. Prick it with a lance and you will find that resistance is hardly perceptible, though it will bleed freely. See it again in a day or two, and you will find it has taken on the appearance of connective tissue of flesh, which soon assumes the appearance of the gum.

Let us see why the change of appearance; what produces it. The cell building material, plasma, the cells generating within themselves new cellular tissue, the fluid part of the blood coming in contact with healthy cells upon the margin of the gums by the curative power of vitality, distributing or arranging the particles into the form of new cells until the whole mass is transformed into living cells, each cell taking on life after its kind. But suppose inflammation be too great for the physical strength or the tone of the system too low for cell building, then instead of becoming living tissue, there would be so much dead effete matter which would be sloughed off, its place is supplied with another which in turn sloughs, and these cells floating in the pus, decaying, disintegrating, and with their continual succession of abortive life, are thrown off by discharge. This is inflammation in its suppurative stage. To apply the principle to a suppurative tooth; about the diseased point, nature furnishing plasma, an effort is made to change it into new tissue, but there being an opposing irritant continually there, the inflammation is exacerbated. A dead and decaying pulp is the foreign provocative. Nature failing with her building material, the whole mass is the ulcer you bring away with an extracted tooth.

In both the progressive and retrograde matamorphosis we can see our way to the method or course of treatment. First remove the irritating cause by drilling into the nerve cavity and taking out the dead pulp; this may effect a cure without any further treatment. If inflammation has become chronic, a different



course should be pursued. Now if we go back to the first stage of periodontal inflammation, before disease has extended so far as to produce elongation of the tooth by the inflammation and thickening of the membrane: First remove the cause, the dead pulp; reduce the temperature below the point of inflammation by antiphlogistic treatment. In cases of violent acute periodontitis, where I cannot wait the action of medicine, when the pain is beyond endurance, I use the ether spray carried to the point of local insensibility, and seldom fail of favorable results. Whether the trouble be caused by a dead pulp, or the irritation upon filling the nerve canals, I believe the spray apparatus to be worth all of the other local applications combined. Use sulphuric ether. Rhigoline is more active, consequently there is more danger of sloughing of the gum after using it. In case the patient does not present himself till this stage be passed, and the presence of pus is diagnosed, other treatment must be resorted to, the cells that are broken down must be removed, and healthy granulation restored.

In what way shall this be done? by cleansing the parts, drying up the diseased surface with creosote or carbolic acid. If there be a fistulous opening force it through the apex of the root until it makes its appearance at the opening; if this is successfully done, do not fear to fill the nerve canal as soon as possible to prevent further irritation; the diseased surface being destroyed there will be a new deposit of plasma, producing new cells, but if there be no fistulous opening and you stop the cavity, you will perhaps cause violent inflammation and pain. Here we have different ways of going to work, one is to close the cavity and force the pus to make its way to the surface through the alveolar walls, forming a fistulous opening (treatment as before described); the other is less painful to the patient but more trouble to the dentist, and consists in the application of detergents and antiseptics; these may be inserted upon pledgets of cotton, while the absorbents may be stimulated by painting the gum with iodine. I have secured resolution by stopping up the tooth till pain was quite severe and swelling had commenced, then by proper remedies, supplemented by the ether spray, secured quick resolution and healthy action. Alveolar abscess, where it has become chronic, and the foramen of the root is closed, and remedies cannot be forced through the root of the tooth, I fill the nerve canal and leave the cure to time, which may be safely done



when the irritating cause is removed by filling the nerve canal securely. Do not apply creosote to arrest inflammation, nor iodine, nor carbolic acid, as many have done. Creosote is an anti-septic and a caustic, therefore produces inflammation. Iodine excites the absorbents and should be used only when there is work for those organs. Aconite has the power of lessening inflammatory action.

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## HISTORICAL SKETCH OF THE MAD RIVER VALLEY DENTAL SOCIETY.

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BY GEORGE WATT.

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[Read in skeleton at a meeting for the reorganization of the Society, at Dayton, Ohio, October 24, 1882, and published by request of the Society.]

THE writer makes free to state, in justice to himself and the Society, that the book containing the constitution, by-laws, and minutes of the Society was not accessible, and, consequently, he had to depend almost exclusively on his memory, therefore this sketch is not what it ought to be.

In the early autumn of 1859, Dr. A. A. Blount came to Xenia, and with Dr. George L. Paine, called at the office of the writer, and after some miscellaneous conversation, the formation of a local Society was spoken of, and before parting we set a time for a preliminary meeting in Springfield. In the absence of the minutes, I cannot positively fix the date of this informal meeting, but if my memory is not at fault, a valuable paper, sent by Dr. W. A. Pease, was read. It was entitled "Thoughts for Dentists," and may be found in volume 13 of the *Dental Register*, page 277.

The first regular meeting was held in Springfield, November 17, 1859. I can recall the presence of Drs. M. M. Oldham, Ramsey, and Blount, of Springfield; Drs. G. L. Paine and G. Watt, of Xenia; and Dr. J. H. Paine, of Franklin, now of Middletown. At this meeting, Dr. G. L. Paine read an "Essay on Crown Cavities in Molar Teeth," which may be found in the *Dental Register*, in volume 13, at page 297; and probably at the same meeting Dr. M. M. Oldham read a paper on "Impressions."

On the first Tuesday of January, 1860, the Society met at Xenia. Dr. Taft's editorial notice says it was composed of dentists from Bellefontaine, West Liberty, Urbana, Springfield, Dayton, and Xenia. A paper was read at this meeting by Dr. J. H. Paine on "Preparation and Filling a Simple Cavity in the right superior Cuspid, Posterior proximate Surface." Dr. J. Taft and some others united with the Society, I think, at this meeting. A Code of Ethics and a Fee Bill were adopted.

The next meeting was in Urbana, the first Thursday of April, 1860, this being the fourth quarterly meeting of the Society. This meeting was held at the office of Dr. B. A. Rose. By this meeting, and its doings, I am reminded that Dr. G. Watt was the first President, and Dr. Geo. L. Paine the first Secretary of the Society. At this meeting Drs. Pease and Bradley, of Dayton, and Drs. Harris and Williams, of West Liberty, were elected members. There was a discussion on Mechanical Dentistry during the day, and at the evening session, Dr. Clippenger read a paper on "Taking Impressions in Plaster of Paris." This paper may be found in volume 13, at page 628 of the *Dental Register*. But for a few meetings following, the recollection is too indistinct to rely on, and no minute account of these meetings can be given, in the absence of the minutes. At one meeting Dr. Blount read a paper on "Fang Filling;" and Dr. Rose one on "Treatment of Alveolar Abscess." The first is found in volume 14 of the *Dental Register*, at page 70; and the second is found at page 81 of the same volume. At this meeting the Society adjourned to meet in Bellefontaine, the first Thursday of October, at the office of Dr. Clippenger, at 2 P. M., and Drs. Palmer, Bradley and Watt were appointed essayists. In accordance with this appointment, Watt read a paper entitled "Thoughts on Caries," which may be found at page 270, of volume 14 of the *Dental Register*, and is also included in "Watt's Chemical Essays," and is, in substance, used as an appendix to Taft's Operative Dentistry, thus giving it a much broader circulation than its author or the Society anticipated.

But without minutes or memorandum, it is found impracticable to do anything like justice to the noble, energetic little Society. An interesting item for the journals could be made by preparing a summary of the work done by it, the number of pages furnished the periodicals, and the general character of the

papers read before it. If no one else can be induced to take up this good work, I hope to be able to do something in this direction ere long, but would much prefer that an able pen, and one with more leisure, should make the record. If this were done, I verily believe all would be surprised to learn how much work it has performed, and would be convinced that our worthy member, Dr. Berry, did not overstate when he said: "This has been the best of our local societies."

The late civil war was hard on our little Society, taking many of its most active members; and as it had been so liberal, and had manifested so much of the missionary spirit, as to take in members of the profession somewhat objectionable, hoping thereby to elevate and improve them, it was found impracticable with the reduced membership, to manage them. Rather than to see the beloved and endeared little Society take a lower stand in ethics, a few members, the very best friends of the Society, met *exactly on time*, and dissolved it by a *sine die* adjournment, literally putting the good little Society to death to save its life, or rather, to save its honor. But it may be said in a pitiful pun that the *sine die* was not a sign it died, for in a short time a new Society with the same name and substantially the same constitution and by-laws, was organized, the objectionable members being left out.

The new Society prospered for a time, but for reasons not calling for discussion here and now, there has been a suspension of the meetings for some years. But now, mainly I believe through the indomitable energy of Dr. Berry, it is proposed to revive it; and here we are. Let us resolve, here and now, each and all, that the Mad River Valley Society shall renew the vigor of its past life, and display the energy and activity of its early years.

I have found it impossible to do justice to the subject assigned me, as I have had to rely mainly on a treacherous memory.

Though a little foreign to the duty imposed, perhaps, may I not allude to the fact that probably no other dental society of its size includes two dental journals, one the oldest now in existence, and the other almost the newest. The Society ought to find no difficulty in having its transactions published. I feel sure it will find ready help in laying its thoughts and actions before



the profession. And while it is not for me to suggest, I would say, nevertheless, that it would probably be a good plan to regard papers read before the Society as referred to both journals; but of course the Society must do as it thinks best in this, as in other things. It is under no constraint to give its papers to either of them; but I doubt not the *Register*, and I know the *JOURNAL* will be pleased to lay before the profession any essay or paper which the Society regards as worthy of publication.

Before closing, it may be well to allude to some miscellaneous events, without much regard to date, which may give additional light as to the character of the Society.

A member was reported by the committee as worthy of a reprimand before the Society for unprofessional conduct. Dr. J. Taft was appointed to discharge the disagreeable but apparently necessary duty. While the words and tone were mild and sympathetic, the reprimand, taken as a whole, was most fearfully severe, and in all the experience of the writer, so serious an impression was never made and felt in any Society. Not a member present failed to be most seriously impressed by this unique transaction. It is not necessary now to give name and date. The meeting at which this occurred was held in Xenia, and at it, Dr. Watt read a volunteer paper, written when bedfast and in great agony—a paper with a history. Its title is “Professional Longings”; and it was sent to the *Dental Cosmos* and rejected. Without reporting this fact, it was read, by way of appeal, word for word, as rejected, and the Society by unanimous vote requested it for publication. Then the fact of its rejection was told, and another vote requested, and it was given with enthusiasm unanimously again.\*

I mentioned that the war was hard on the Society. I cannot pretend, at this late day, to name those who went into the service of our country. Palmer, Blount, Jones, the two Paines, Watt, and many others. The heroic Palmer in leading a charge at Gettysburgh, it is said, fell riddled by nine bullets. Jones was killed by accident at the burning of Pike’s Opera House.

Some of our members, at least three, carried the banner of

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\* In addressing a large meeting a few years ago, the writer made a quotation from this article, and a Baptist minister hinted that he was guilty of plagiarism, in not giving credit to Joseph Cook, and would not be convinced till shown the article, as it first appeared in the *Dental Register*.



American dentistry into Europe, and to name Wright, Blount, and Williams, is proof that the flag was not lowered.

Perhaps no other Society of the size of ours has furnished so many teachers for our dental schools, or so many editors of dental periodicals. Besides, we have in our worthy President, the first alumnus of the first dental college west of the Alleghenies, and the second in the world; and the laudable example set by him throughout his whole career, has done much to elevate and keep erect the tone of professional etiquette. It would take a bold, reckless alumnus to do a mean or low thing in his presence.

Nor has the little Society ever been niggardly. When it was proposed to make Dr. C. S. Barnum a pecuniary acknowledgment for his free gift to the profession, the Society, by a unanimous vote gave all the money in its treasury. This is but a type of its liberality.

But what shall I say more? The time would fail me to tell how much the profession is indebted to this little Society for its progress—for its great attainments in combatting disease, and in replacing lost organs. A careful review will convince any of you that our worthy President was correct in claiming that this has been the best of our local societies.

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### “PULL ON MY ARM.”

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BY DR. J. H. SIDDALL, CANTON, O.

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TO-DAY a farmer brought his wife to me for some filling, a woman of about thirty years, and medium size. The work having been done all but the removal of a lower wisdom tooth on the right side, which, being somewhat decayed on the buccal surface, and suffering for want of room, I *levied* on. With my left hand supporting her lower maxilla, and the thumb of the same braced upon the molars, directly in front of the offending one, after a careful and deep hold had been taken, I began to luxate and pull. Not the least sign of loosening could be felt or seen, and I increased my power, until, perhaps, two minutes had been spent, when I began to experience the slightest movement as

though coming *under protest*. My strength, which is equal to more than the ordinary dentist's, began to fail, and knowing that this was a case of main strength, as well as judgment, I bid the astonished husband, who stood trembling by, *Pull on my arm*. He quickly and properly did so, which rested my arm and moved the burden a trifle; but the extra strain on my arm almost broke down my grip in my hand. But before I surrendered or wavered, this stubborn customer, which I enclose, came out whole! It has two roots which both turn back, and are affected with exostosis. Never before was I so *hard* up for *strength*, nor did I have to call on any one to *Pull on my arm*.

[The accompanying specimen is truly a hard looking customer. For cases like it we generally use a modification of Physic's elevator, or, perhaps nearly as often, and always when the mouth can be but partially opened, a modified Hendrick elevator, once called, in White's catalogue, Watt's elevator, simply because Watt showed the modified instrument to Dr. Arrington when he was traveling for White, and he took it to Philadelphia for a pattern, and we suppose they did not know what to call it. Both instruments referred to turn the tooth backward, accommodating the curve in the roots. We have often removed such with but slight effort, after strong men had totally failed. But Dr. S. succeeded. Good for him!—ED. JOURNAL.]

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## FOOD FOR REFLECTION.

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BY PROF. W. H. EAMES, D. D. S.

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[Read before the St. Louis Dental Society, February 6, 1883.]

FROM the records of the St. Louis Dental Society, published in the *Dental Review*, 1859-60, I find that the Society was organized in December, 1856, more than twenty-six years since. It was organized with a membership of sixteen, which, after a period of two years, was reduced to six of the original members. Some having withdrawn, others removed from the city. The membership, therefore, was not large; and yet I find, on looking over the published records, that much valuable work was accomplished,—work

which the profession, the world over, has not failed to recognize. Work was done which has given to the profession of St. Louis, and to this Society an enviable reputation, which we must strive, more earnestly than we have been doing, if we desire to maintain. I find it was composed of working men who shirked no duty imposed by the Society. They were united, and worked together, and in harmony, not alone for their own good, but for the good of the entire profession. Papers were read, the discussions were written out and given to the world through the medium of a dental journal. Not alone this, but the expense of illustrating a subject, when necessary to a full understanding of it, was frequently indulged in, showing their willingness to contribute of their means as well as their time and thoughts, to make the Society a success. Each man did his duty, and was ever ready to contribute his mite to advance the cause in which they were embarked. Much was accomplished in these first two years of the St. Louis Dental Society—the result of united persistent effort. It is for this purpose that societies are organized and maintained in every department of life. Concentrated effort of a class in any direction will accomplish much, while individual effort in the same direction is almost nil. The Society contributed over one hundred pages to our dental literature, through the medium of the *American Dental Review* in the two years from 1858 to 1860; and the contributions were of merit, and fully up to the standard of advanced thought of that day.

Now let us take a step ahead, say twenty-five years, and look in upon the St. Louis Dental Society, and read up the record for the past two years. It is a short task. Very few papers,—short discussions, of which little record has been kept; a general lack of interest, and a not altogether harmonious body. Consequently the work has not been what we ought to expect from so good a beginning. I have no means of knowing the amount of published proceedings, papers, etc., emanating from the Society during the two years just past; but I do not think it would reach one-fourth the amount published by the Society between 1858 and 1860. To what account shall we credit the difference? If we cast about for a reason for this meagre showing of services rendered, do we find anything to which we can credit it? Is our membership less now than when such good work was done? Is the number of laborers in the vineyard less? I think not. Are



they less skilled? Do they not understand the calling better even than the old fogies of twenty-five years ago? Of course they do. No one present would be willing to acknowledge, for one moment, that the individual membership of the St. Louis Dental Society to-day are not as well, if not better qualified to practice the profession as those men through whose labors and contributions, twenty-five years since, the Society gained so much professional reputation. With the increase in educational facilities, dental literature, and the great advance dentistry has made in science and art, during the past twenty-five years, we ought, certainly, to be far ahead of those old veterans in scientific attainments and professional knowledge. But have we, either individually, or as a society, advanced in the past twenty years? I fear we shall have to acknowledge that we have not kept pace with the advance thought of the day. We have been laggards, and are behind in the race. It is this, perhaps, that deters us from submitting our thoughts, on scientific subjects, to public gaze and criticism. We are fearful lest we give ourselves away, showing how *little* we know. We prefer taking a father's advice to his foolish son: "Son, keep your mouth shut and no one will know you to be a fool!" We keep our mouths shut, and rest on the laurels the founders of the Society honestly earned, and the world knows not whether we are wise or foolish. Is this right? Is it just? Are we doing our duty to ourselves or our profession by thus attempting to hide our ignorance, if this be the cause of our silence; or if being possessed of wisdom, we do not let our light shine for the benefit of those who are in darkness?

The February number of the OHIO STATE JOURNAL contains a notice of the St. Louis Dental Society, giving time of meeting and names of officers for the ensuing year. The first words of this notice, if rightly considered, is a rebuke which should mantle the cheek of every individual member of this Society with shame. "This active Society!" Whether the writer intended this as a compliment, prompted by his knowledge of the Society in its earlier days, or knowing the present facts in relation to our inactivity, he intended it as a bit of sarcasm, I am not able to say. If it be that he is ignorant of our present spiritual condition, and consequently believes us to be better than we are, we should bestir ourselves ere it be too late, to secure the reputation we still seem to have; or, if knowing the facts, he intended it as a just rebuke



for our laziness, it should be a lesson which we should profit by. We should set to work, without delay, to redeem ourselves. We have a new captain and officers, who promise us a successful cruise for 1883; and I have no doubt, if the crew do their duty, we shall heave into port next December with a good cargo. "So mote it be."

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## VALEDICTORY ADDRESS.

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BY S. T. KIRK, D. D. S., KOKOMO, INDIANA.

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*To the Graduates of the Indiana Dental College, in behalf of the Trustees of the Institution:*

I HAVE been appointed to address briefly the graduates who, having successfully passed the requisite examinations, are about to pass out of the portals of the Indiana Dental College, each with the certificate of its Faculty and Trustees, testifying that they are worthy of the confidence and patronage of the public in their chosen profession. I may be allowed to offer, as a prelude to what shall be said to them personally, a few remarks on behalf of the Institution which thus sends them forth with the highest mark of honor it has to bestow.

The Indiana Dental College is the child of the Indiana State Dental Association, which, having in view the honor and success of the profession, and the welfare and interest of its patrons, obtained, as the result of persistent labor, legislative enactments regulating the practice of dentistry in this State.

In elevating the standard of qualification a new necessity was at once revealed; that was an institution which could impart the knowledge and training required for the successful practice of Dental Surgery. After several conferences held by the dentists of the State, this Dental College came into being. It was vigorously and generously supported by stock subscriptions, and in October, 1879, its first course of instruction was begun, with six students, three of whom were graduated.

The second session, that of 1880 and '81, was attended by twenty-one students, ten of whom were graduated. The third class, that of 1881 and '82, had twenty-eight members, of

whom fifteen were graduated. The rooms first occupied in Thorp's Block, East Market street, were found to be inadequate for the growing school; and during the summer of 1880 the commodious quarters now occupied were fitted up and amply furnished for the enlarged work of the Institution. At the beginning of the third session the financial condition of the College was found in such satisfactory state, that the trustees reduced the amount of the original stock, and withdrew from the market all that was then unsold. This indicates that the Indiana Dental College is an established Institution, and is in a flourishing condition.

*Merit* on the part of the applicant for honors, and not *favor* on the part of its officers, is the demand made of every one who seeks from it a passport to the world's confidence, and the respect of our honored profession. The standard has been fixed so high, that we believe its diplomas will ever command the respect of all, and be of the highest value to those who have earned them by diligent attendance on lectures, and close application to work and study.

The fourth session, the one now closing, commenced with thirty-five students, of whom twenty-one are now present to receive the degree which classes them with the qualified members of our beneficent art; and now to the gentlemen about to receive this flattering distinction, I address the additional remarks I have to offer.

I cast no doubt whatever upon the stamp of *merit* which this College has impressed upon your character, as distinctly, I trust, as is the seal enstamped as its testimonial on your diplomas. That is assurance to me, that you have gained such proficiency in knowledge, and such skill in practice, as entitles you to the recognition you now receive from our skilled profession. I know by whom you have been instructed; and also by whom you have been examined. That you may now safely and hopefully enter upon your chosen life-work is the testimony of the faculty and the trustees of this College. And that you have attained to this coveted dignity is a matter of congratulation. But, allow me to say, that while I hold this honor in no light esteem, it is possible for you to make too much of it, and thus make it of less account in your future career than you ought to make it. If you have studied, so far, simply to pass examinations and gain your degree,

the learning and skill you seem to have acquired will not remain with you. Learning is a jealous mistress, and will not remain yours, except wooed and won for her own sake. Those who make class or college honors the goal of the mind's ambition, are almost certain to slacken their pursuit of knowledge and excellence in their profession when once these honors are obtained. But the student seized with the divine desire to *know*, pursues knowledge for its own sake. The day of graduation is only a mile-stone, which marks the first stage of progress in the grand pursuit.

You have fairly won your commissions, and are entitled to the rank and uniform of your corps; but the battle for success is yet to be fought. All has been done for you that our Institution can do. You have your equipment and proper professional recognition. You go forth with the good wishes and benedictions of your instructors. The rest you must achieve for yourselves. The habits of the student are as necessary to enable you to keep what you have attained, as they are to enable you to make the progress essential to your success in life. So far you have held your minds in a receptive attitude; you have depended on others. But now you are to pass away from these elder brethren who have been your guides and helpers. You will be where you cannot consult them, and where you must evoke success in your work, if you have it, from that which is within you—from that which is your own—made so by dint of personal conquest and labor. You must rely on your own judgment and skill. That you may not fail, you must still be earnest students in every branch of your profession. You must not only *know*, but be sure you *know it*. Then emergencies will not find you unprepared. When they come they will be occasions for furnishing to the world worthier proofs of capacity, and more valuable passports to public confidence, and ultimate success than any with which we can furnish you to-night.

You ought to become contributors to Dental Science. The profession of dentistry is yet young, and although it has made rapid and gigantic strides in the short time it has been a recognized profession, yet there is much connected with it which the most proficient know to be still beyond their reach. We are specialists, but our specialty is second to none so far as service to humanity is concerned. To its well prepared, studious, young



practitioners, must the profession look for the literature, the discoveries, and the appliances to make dentistry a still greater blessing to mankind. Then recognize the fact that there are still mysteries all around you, and do what you can to solve them.

Allow me to suggest a proper respect for the other learned professions as essential to success in your own. That is a contemptible pedantry which obtrudes unfriendly and uncalled for reflections upon the work of other professions. Men of real skill are better known by the confidence they place in professions other than their own, in the lines of knowledge they respectively acquire and perpetuate. "With the same measure ye mete to others, shall it be measured to you again, pressed down, shaken together, and running over."

It is a shame for a clergyman to intermeddle officiously with that which belongs to law or medicine; and the lawyer, physician, or man of science, who fails to accord proper respect to the man learned in theology, concerning the things that lie in his special field of research, wins no special confidence from the public for his own profession. No one profession has all the wisdom or learning. The professions are so related that they must stand or fall together, in public esteem. It is fair to presume that every dentist has an acquaintance with much that enters into the science of medicine, and should have a thorough knowledge of its practice in all-cases pertaining to his specialty; but by every consideration of reason and modesty, he should refrain from setting his judgment against that of one who gives his whole time and thought to the studies and general practice of that noble profession. Every man should strive to be a master in his own work, and that he can be only by keeping himself closely to it, and according respect to those in other lines of learning who are doing the same thing. The man who would win respect for his own profession, must accord respect to those other professions which have equal claims.

As you go into the world, remember that you are candidates for its favor and patronage. *That* you must win or you will fail. By all lawful means you should seek that good will of men.

The world can do without any one of you, but no one of you can do without the confidence and good will of men; and the best way to get that favorable regard is to do all you can, both



in your profession and out of it, for the progress, prosperity and happiness of the communities in which you will pursue your calling. Meet society half way at least, and you will find a hearty welcome. Good, honest work in your own profession, is of course the chief thing to be kept in view, but no man can be all he ought to be, or win for himself the place he ought to have, without lending a hand to every good work going on in society. When there is a meeting of your political party attend it. You need not be noisy, officious or super-serviceable, but *be there*. If you have anything to say, say it. If you have not, be silent. But *be there*. You will make acquaintance with men. You will take place as one of the forces of the busy, active world. Be every Sabbath in the church which most accords with your views. Whether you have much faith or little, be in your pew every Sunday. Men will respect you for it. You will get no harm, if you should even fail to get good. Keep out of your office on the day you should be in church, unless called there to relieve a suffering patient. Six days' honest work is enough for body and mind. The seventh you need for rest, and the demands of the higher nature.

I ask no man to seem what he is not; but the way I commend requires no insincerity. You need the rest of the day appointed for rest; and you need the society of good men, and they need your help. Give and receive. Be in the social life of your town all that you can. Many a professional man fails because he is unsocial, and holds himself aloof from men. Here and there a man of commanding genius, or power in some direction, may succeed in spite of moroseness; but mediocre men cannot afford the experiment. And if they could they ought not to be mean enough to want to try it.

Ministering then, for this time, if you will allow the figure of speech, as the priest of our profession in this service, I give you the benediction of this College, and of its friends everywhere. We shall expect to hear good reports from each and all of you. We shall follow you with our best wishes. Be ever mindful of this Institution, and let it have ever your good will and assistance. Be true to yourselves, and no one of you will ever have occasion to ask the gloomy question of the Pessimist philosophy, "Is life worth the living?"

## A PREFACE TO LECTURE ON EXTRACTING TEETH.

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BY G. S. SHATTUCK, M. D., D. D. S.

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*To the Graduating Class in the Michigan College of Medicine.*

GENTLEMEN: This is my last lecture of this course; and it is fitting that the extraction of the teeth should be the last subject to be considered, as it is the last dire necessity to relieve pain when all other means have failed, or circumstances render it impossible to restore them to health. Now that you are about to leave this hall of learning, and go out to put into practice what you have been taught, doubtless many of you will locate in the country, where a dentist is not at all times accessible. You will be called on for advice and treatment of the teeth. You have been taught how to temporarily treat diseased teeth until they can be put in good condition by the dentist; and it now becomes my duty to speak to you on extraction. This is a very important subject, as it embraces the well-appearing, as well as the well-being of the human race. The face of mankind gives expression of character, makes up individuality, and individualities make up nationalities. And the American people, as a nation, are fast becoming a toothless race, of flattened features, and distorted expressions, by the loss of the natural teeth. And as you go forth to practice your chosen profession, it devolves on you to use your influence, knowledge and skill toward maintaining the features and identity of your fellow citizens that nature has given them. All the teeth in their proper places show design by nature to give contour and expression to the face. Civilization, artificial modes of living, our neglect of dental hygiene, in the hurry and bustle of active life have been productive of diseased teeth. The aborigines, the American Indians, in their wild condition, have well developed jaws, well shaped and sound teeth. But when civilization overtakes them, and our mode of living is inaugurated, their teeth soon degenerate.

We deprive the grain which makes our bread of its bone-making and bone-sustaining properties, giving them to the hogs, while our teeth starve in consequence. We find in the North of Scotland, and other European countries, where the people subsist chiefly on oat-meal, and other coarse foods, that contain the phosphate of calcium, they have well developed, strong, sound teeth.

To the intermarrying of different nationalities is due, to a certain extent, some of our dental infirmities; for instance, the crowding of the large broad teeth of the German into the diminutive jaws of the American. Poorly developed and diseased teeth are hereditary. Syphilitic taint predisposes to poor teeth.

Other causes of decayed and diseased teeth I have mentioned in previous lectures, also their prevention and treatment; but you will be called on to extract or give advice with reference to extracting, and it is very necessary for you to know what to extract, what not to extract, and, lastly, how to extract. Extracting teeth means the absorption of the alveolus. You will doubtless remember that I told you in a previous lecture that the alveolar process is provisional with the teeth, has its growth, and exists with them, (until destroyed by disease), and is absorbed when the teeth are lost. Now, absorption of the alveolar process means contraction of the arch. To extract a deciduous tooth before the time of eruption of the permanent one, means loss of space for the incoming tooth by contraction of the jaw. Thus we may get a crowded arch, and the irregularity may cause distortion of the features, and decay. These teeth should be so cared for as to retain them as long as nature designed them to remain. To extract the permanent teeth means loss of contour by absorption of the alveolar process. And, what is worse, it means loss in mastication, or artificial teeth. Now not one set of artificial teeth in a hundred ever wholly restores the contour of the face, especially when the cuspids are extracted, for they are the key of the arch. You see by this skull the prominence of the alveolus over the eye teeth, which forms in part the canine fossa. By extraction of these teeth this prominence is lost, and the expression it gives to the face is not fully restored by the very best constructed set of artificial teeth. So important is the preservation of the natural teeth, to the appearance of the face, that the roots of teeth that have been destroyed by decay or otherwise, are treated and supplied with artificial crowns, and thus made useful and ornamental during the rest of life. Snatched, as it were, as brands from the fire. Now then, let me give you a good rule: Never extract a tooth or root which can, by treatment, be made healthy and useful. And in the present state of dental science, a great many old, decayed roots, are restored to health, and made to do service, that a few years ago were considered irredeemable, and doomed



to the forceps. This is a triumph of which the dental profession are justly proud. Why should you extract teeth which can be restored to health, any more than amputate fingers or toes which can be made healthy? In former lectures I have informed you what class of, and how diseased teeth can be restored to health, and I will now endeavor to instruct you as to what should be extracted, and how to extract them.

Then followed the instructions, which I will not occupy your space with, as it may not be interesting or instructive to the dentists.

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## THE HACKNEYED DENTAL QUESTION.

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BY A PHYSICIAN.

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THOUGH a physician, I avail myself of opportunities, and read some of the dental journals. From these, and from friends who are engaged in the practice of dental surgery, I learn that there is a decided difference of sentiment among dentists as to the best method of conducting dental education. And it appears to me that the opinions of some are at least modified, if not primarily formed, by a desire to have dental surgery recognized as a specialty in medicine, and dentists as special medical practitioners. The writer has not been asked for his views and opinions on this question, and to some it may appear impertinent, if not impudent, for him to offer them unsolicited. But as the editor of the *OHIO STATE JOURNAL* has seen fit, heretofore, to publish some of his sentiments on other subjects, these thoughts are offered for his approval, and if favorably considered, we will rest content with the verdict, and endeavor to be patient should there be any adverse criticism.

One fact stands out like a beacon light—stands up like the blue mountain peak over-topping surrounding elevations. I allude to the fact that dental science made no progress worthy of the name, till the formation of a special college devoted wholly and solely to the development of dental surgery—to the teaching of dental science. This one college, established in Baltimore, did not stand long alone, but was promptly followed by a similar or-



ganization in Cincinnati. All will acknowledge that these two colleges, in a few years, did more to advance a knowledge of dentistry than had all the medical colleges done previous to their existence. These two, by their success, stimulated those interested, to the establishment of others, till dental education seemed to be placed on a secure basis.

It is worth while, also, to notice the plan of organization followed by the first two, as they are typical of all their immediate successors and comrades. They were established by physicians, and organized on a purely medical basis. The necessity of studying anatomy, physiology, chemistry, therapeutics, and pathology, was as well recognized by the organizers of these as ever it was by conductors of a medical school; and as far as I know, arrangements were made for quite as extended a course in these studies as was common to medical colleges.

The success of these colleges, or something else, has induced very many dentists, as I infer from reading their periodicals, to regard dental surgery as a separate and distinct individual profession. These are not willing, if I understand them, to regard dentistry as a specialty in medicine, and they refer to the character, attainments, and professional habits of individual dentists, and ask, with a half sneer, if these are medical men, special physicians. But the real question at issue is not, are dentists physicians? but, is dental science, in its nature and essence, a part and portion of medical science? And with me this statement of the question seems to answer it, and in the affirmative; for scarcely any one would claim that medical science is so partial and so constricted that it ignores some of the organs and functions of the human system, and those that are so essential to health, comfort and beauty as are the dental organs.

It ought to be conceded by all, that dentists, and all who assume responsibility for the welfare of living organs, should be well versed in anatomy that they may know what and where the organs are; also in physiology, that they may understand their normal functions and natural offices; and in pathology, that they may know the modifications in structure and function produced in them by disease; and also in therapeutics, that they may understand the remedial means and measures demanded by each diseased condition; and further, they should be familiar with chemistry, or they cannot understand pathological changes, nor

the influence of medicinal agents. And the questions are still open, "How are these to be studied? How taught?"

After all, it does not matter much, provided the teaching is real and thorough, as well as appropriate. But in these days it seems impracticable, almost, to get the best qualified men for teachers in an institution lacking an endowment. As was said by Dr. Berry, in the *JOURNAL* not long ago, some good teachers in the early days of dental colleges, felt the necessity of making pecuniary sacrifices for the good of the cause. But, as was remarked by him, such self-denial is not to be looked for in these days. It is unfortunate that tuition fees, in dental, as in other colleges, are not reliable as a source of proper compensation for the teachers. I know that good men and true are engaged now as teachers in such colleges, but the necessity of engaging in practice or some other business, in order to secure a suitable livelihood, makes it necessary for them to give but a fractional attention to the teaching, whereas, if they could give their entire mental force to it, better results would be seen. This remark applies to medical and other colleges, to some extent, as well as to dental schools.

On the assumption that dentistry is a specialty in medicine, some leading dentists argue that in educating dentists, the same plan should be followed as in educating oculists or other specialists. That is, that the student should take a full medical course in a medical college, as if he intended to practice medicine and surgery in all their departments, and after this take a special course to fit him for his special practice. This is plausible, and no very serious objection can lie against it, unless it be the shortness of human life. In the present state of things it is doubtful if a better method of educating oculists or other specialists can be carried out; but, in assuming that dentists should be educated in this way because oculists are, there is a slight begging of the question, because it is not yet proved that this is the best way to educate oculists.

It is evident, that in ordinary mental states, the memory cannot retain at once all that it is desirable to know of any branch of medical science. How many students at the close of the session can tell us the origin, insertion, and uses of twenty muscles? But such a state of forgetfulness does not prove that the time has been misspent, or that the study has been unprofitable. What-

ever has been well understood—has been thoroughly mastered by the mind, can be recalled by the memory, by a revision very trifling compared with the original study. It is pretty well recognized that the memory can recall, under favorable circumstances, every event ever perfectly known by the individual. The testimony of those taken to death's door by strangulation and restored, is that all past events are recalled; and the writer can testify, from experience, that the feeling is, not that the events are recalled, but that they have never been forgotten. Since then the mind cannot retain, for practical use, all the points in science, I think it should be all the more thoroughly drilled in the direction calculated to be most useful to the student in reference to any specialty he expects to practice.

For illustration, in the study of anatomy, those intending to practice general surgery ought to very carefully study the hernial regions, the structures of the articulations most subject to dislocations, the relative positions of large vessels likely to need ligation, etc., even if he should find it necessary to give less attention to the bones, muscles, nerves, etc., of the facial region. But what the general surgery student may somewhat slight, if necessary, the student of dental surgery must garner as his best sheaves. It would seem, then, that the lectures on anatomy exactly suited to the one, can not be the best possible for the other. And the same principle applies to ophthalmic or to aural surgery.

Holding these views, it appears to the writer that if he were gratuitously furnished with the needed financial support, he could devise a college better calculated to make oculists, (giving them therein their entire professional training,) than the regular medical college in which they now receive the preliminary, or primary portion of it. Of course they would be expected to pursue the same studies as at present, but they would pursue them in a modified manner, as indicated above, recognizing the fact that they can not retain all the knowledge belonging to each department of professional science. If so, in reference to oculists, the same principle seems to apply to dentists; and if money were out of the consideration, I would prefer a dental college totally and wholly independent of a medical college, but always providing for as thorough a course of medical studies, as would be called for in a medical school, unless in the practical details of obstetrics and gynecology.



But society must be taken as it is, and the main thing in dental education, as in other educational interests, is thoroughness. This may be obtained in an independent dental college, or in one connected with a university. The latter usually has the advantage of an endowment, and I regard it as quite probable that they will, for a while, increase in numbers more rapidly than the former.

The attachment of a professor of dental surgery to a medical college, if properly managed, will be found very beneficial to the medical students, and through them, to the race in general; but it will be found of no use as a means of providing the world with dentists; and I do not suppose that anything of this kind is expected.

Regarding physicians and dentists as passengers in the same boat, I felt that an hour, in the voyage of life, might be pleasantly, if not profitably whiled away, by writing this; and as naught is set down in malice, and nothing is charged for the opinions, the paper is given for what it is worth.

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## REGULATING TEETH—A CASE IN PRACTICE.

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BY GEORGE W. KEELY, D. D. S., OXFORD, O.

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THE following case, figure 1, shows the arrangement of the teeth of a young man, aged 22 years, being a case of V shaped, contracted maxilla, with high roof. Between the first bicuspid's palatine surfaces the distance is three-fourths of an inch.

When he came to me, the right central incisor had decayed and broken off, as shown in the cut. The left central being very prominent, and he having a short, contracted upper lip, the deformity was very marked, and a constant annoyance to him; and it was only by an extra effort that he could cover it with his lip. The arch was sharp and prominent in front. This deformity had appeared several times in his grandmother's family, this being the only case, in this family of six children, the others having a normal dental development, as also had the father. This cut would show the case to better advantage had it been taken looking squarely into the roof of the mouth. From the right point of the central to the left of the lateral, the distance is just *three-*



*eighths of an inch.* An accurate impression was taken, and the root of the right central was extracted. On the palatine surface of the model, opposite the roots of the incisors, a piece of lead was adjusted to prevent the plate coming in contact with the parts, during the time the central was being drawn to place. A vulcanite plate was fitted neatly to the roof of the mouth, and close to the palatine surfaces of the teeth. A pin was fastened near the center of the plate, and a ligature cut from rubber tubing was attached to it, and carried forward and over the central, adjusted in such a manner that, while drawing it down, it would also turn the tooth in its socket.

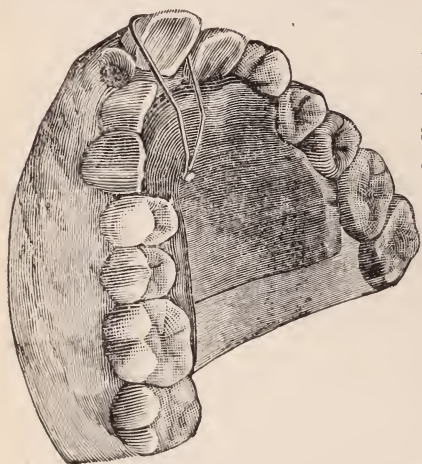


Figure 1.

turned in its socket. Figure 2 shows the great improvement in personal appearance at the close of the operation

The arch in front was considerably flattened, giving it a natural appearance, and he had no further trouble in covering his teeth with his lip. All of his anterior teeth were sound, and although the loss of one of his centrals is a deformity I consider the treatment the best under the circumstances.

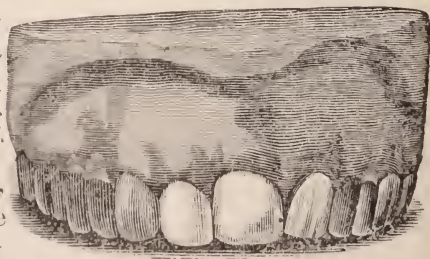


Figure 2.

No retaining plate was made, but instead a waxed cotton thread was tied around one lateral, carried over the central, and

tied to the other lateral, and left there for about a month, and then removed; and the tooth has remained as shown in figure 2. The young man claims to be supremely happy, and I presume he is truthful.

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## PRESIDENT'S ADDRESS.

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BY JOHN G. HARPER, D. D. S.

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[Read before the St. Louis Dental Society, February 6, 1883.]

*Gentlemen and Members of the St. Louis Dental Society :*

It is my desire to place before you some thoughts regarding the ways and means of making our meetings of interest and value to the profession. It is only necessary to have something of interest to bring out the dentists, and have well attended meetings. Heretofore we have confined ourselves to the papers of members, and to subjects introduced by members.

We have three classes of members, viz. : Active, confined to residents of the city ; corresponding, those outside of the city, who wish to work with us and attend as often as convenient. The honorary members are confined to those who have retired from the active duties of our profession. The second class mentioned is small, but by the efforts of our Corresponding Secretary and other members, we hope to largely increase the numbers. The corresponding members, when they have anything to present to the profession, can do so through the Society ; the Society can discuss the subject presented, and the paper and discussions can be given to the dental journals, and the thoughts of the writers furnished to the whole profession. We hope to get enough of the profession to join this class, so that at each meeting, more or less communications will be in the hands of our Corresponding Secretary to occupy a part of our time, and the members will come to hear and discuss these communications. The Society has been in the habit of meeting twice a month ; but for a while we will meet monthly, and should we find enough to occupy two evenings in a month, then we can meet more frequently. The aims and objects of this Society are for the mutual benefit of its members, and the profession at large. If a member cannot write a paper, for the want of time or talent, he can at least ask questions ; and perhaps some other member may be competent to give a suitable reply. Others may be able to give us hints in practice.

Let this be a place for the exchange of thoughts,—also a repair shop, where we may have our minds sharpened by contact with other minds.

The dental profession is rapidly advancing, and by associating ourselves together, we may be able, by our combined efforts, to tame and harness for our practical use, ideas that are rather shy and difficult to approach. This Society needs funds, and I would suggest that each member pay the sum of fifty cents a month, so that we may not be cramped for means. [Dues were raised to \$5.00 per year by vote of the Society.] This Society ought to have the reading-room well supplied with all the dental journals, and have them bound as each volume is completed. They would be invaluable as a source of reference, in time, and if we prosper we could have a library that we would be proud of. It is very expensive to the profession of St. Louis for each member to collect a library of reference, and some of the older works and early numbers of journals are too scarce for many to have them, but one set of volumes would serve the whole membership just as well. It is useless to spend much time in setting forth the benefits of association, as those of sufficient intelligence to belong to a profession, can see that all the leaders in any profession are the leaders in associations for the advancement of their chosen profession, be it what it may.

The ministers have their associations, the lawyers theirs, the different specialties of medicine, of which dentistry is one, have theirs. In fact, to be short, all callings in life, from the ministers in their pulpits, to the rag-pickers in the streets and alleys, have their societies.

Members of the profession who have never written a paper to present before an association, or for a dental journal, have no idea of the benefits to be derived from such an undertaking. My advice is, just try it once and you will keep it up. If you admit you can not write a paper, it shows a lack of interest in your profession. If you are too ignorant to write, the more necessity exists for your going to work and reading up a subject. If necessary, make investigations likewise. You can not expect to rank as a professional man if you are not a student. Should you have any theories or line of practice that seem to differ from those of your neighbors, bring them out, and submit them to the profession. Should they be correct, you will be conferring a blessing



on your profession ; should they be erroneous, then you will be the one benefitted. It requires constant effort to keep up with the forward march of the science of dentistry ; and a failure in this will be detrimental to your reputation in the profession, which has much to do in determining your final success. Constant and untiring effort in our, as in every vocation, will lead to distinction ; and it is equally certain that it can be obtained in no other way.

It is encouraging to us to know that this department of medicine has made more progress in general intelligence and in scientific acquirements, in the past quarter of a century, than any other. "Young, vigorous and aggressive, bound down by no traditions of the past, it is pushing its investigations in all directions, and is constantly being rewarded for its efforts by flattering results." Each one can do something towards diffusing light in dark places. By associating, we will learn to suppress every selfish thought and feeling, before they have fully taken shape, so as to not only act out the precepts of the Golden Rule, but also to feel a true fraternal affection for every member of our profession who is engaged honestly, faithfully and modestly in the same work as ourselves, and who is endeavoring to solve problems which have hitherto baffled the efforts of our predecessors ; and upon the solution of which hang mighty interests connected with our race. Let us, one and all, aim to increase the sphere of our professional usefulness, by making constant advances upon the store-house of general and scientific knowledge.

It was the unanimous voice of the Society that called upon Dr. W. N. Morrison to present a paper at the next meeting, to be held on March 6, 1883.

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## Editor's Specials.

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"Write the Vision and make it plain."

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### PHYSICAL CHARACTERISTICS OF CARIES.

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SOMETIMES we look at a decayed tooth and are distressed at its sad condition because so much of it is black, and so very black at that. The decay may be in the central incisors of a pretty



girl; and we are shocked to think that her beauty is so extensively and hopelessly marred. The case looks very discouraging. On a more careful examination we find these teeth better than their appearance indicated. A very definite line of demarkation between the sound and the unsound is found to exist. The texture of tooth material not involved in the decay is good. The decay can all be removed, and the undecayed portion shows the natural color and hardness. And in most cases it will be found that the pulp is not exposed. In some cases, having the appearance above described, the decay may have reached a point in the tooth previously occupied by pulp tissue, but the pulp vessels seem to have taken the alarm, and to have deposited bony material in front as they gradually receded from the point of danger.

The practicing dentist soon learns to regard this kind of cases with less alarm than he feels in reference to some others not so repugnant in appearance. He not only finds a definite line between health and disease, with the pulp unexposed, but also less of tenderness in subjacent tissue, and less breaking down of the tooth. Indeed he finds most of the tooth material in place, some of it changed in texture, and some in color. In nearly, if not in all respects, he finds such cases the most manageable of all that come to him for treatment of decay. Even the dentine already affected by decay is hard and somewhat firm. The experienced dentist delights in a case like this, as he is ordinarily assured of two desirable things,—a good foundation for his filling, and a reasonable assurance that the same variety of decay will not be renewed around the margin of his filling.

The patient, a young lady, perhaps, is in great distress of mind at the thought of the disgusting black spot on every smile and under every kiss bestowed on her schoolmates; and what is life to a young lady who can neither smile nor be kissed without the torturing consciousness of her own imperfections? In a state of mind consistent with her condition, she calls on a dentist, and eagerly points out the blackened central incisors. He glances at them, and immediately shows her a pair of bicuspid, perhaps, not black at all, and if at all changed in color, a small spot on each is a little whiter than the surrounding undecaying portion of the teeth. About these she seems to be almost unconcerned. They are not black, and even if they were, she could smile some

without exposing them much. After a full explanation she allows him to treat them also, after getting rid of the blackness of the front teeth. He is not so content in reference to their condition. He finds several points of difference when comparing them with the dark-colored incisors, which he has just treated.

The decayed portions of these teeth are soft,—very soft. The hardness and brittleness noticed in the others are totally absent. If tooth material still remains in the cavity, it is soft and pasty,—plastic. Sometimes it can be nearly all washed away with a stream of tepid water. In other cases, most of it can be wiped out of the cavity of decay by a pledget of lint or cotton wool on an instrument. The surface of the cavity is often, if not usually, sensitive, indeed, painful to the touch of an instrument, or other hard substance. And instead of being superficial, as he found the other, this decay is penetrating, and to his great regret, and as is often the case with decay of its appearance, he finds the pulps exposed. And even when the pulps are not exposed, he does not fill with the confidence manifested in filling the others, because he has learned, from experience, that the same form of decay, or decay having the same general characteristics, is apt to attack the margins of the cavities after he has filled them.

Will the reader, before proceeding further, carefully think of the differences in the physical characteristics of the decays described in these two cases already noticed? They are spoken of as if supposed cases; but they are taken from real life,—are described just as they occurred in actual practice. They differ in color. One is jet black, and the other is as white as chalk. One is hard, and the other is soft. In one the substance of the tooth remains mostly in place; in the other it is disintegrated,—utterly broken down. One makes very slow progress, even in a feebly developed tooth; the other progresses rapidly even in well developed teeth. One is almost certainly and permanently arrested by filling; the other very often goes on with its destruction of the tooth after the most careful of filling.

And now let us look at another case. A patient calls with very many teeth decayed. None of the decays are black; and none are as white as is the natural color of a healthy tooth. Some of them are nearly colorless, resembling fresh gelatine,—that clear, semi-transparent color which the premium fruit jelly shows at the county fair; some are orange colored, or yellowish, some brown,

and some nearly quite black. The most distinguishing trait of this decay is the presence of the animal, or organic material of the tooth, sometimes entirely filling the cavity of decay, while the greater portion, if not all of the so-called inorganic matter is dissolved out and is washed away. The unaided eye, and a judgment unassisted by chemical research, are often competent to detect the absence of lime-salts, or rather, to recognize the fact that they are absent. In this variety of caries we have had portions of the remaining mass found in the cavity of decay subjected to the most careful inspection, by ourselves and others, without finding even a trace of lime-salts. In other specimens removed from the bottoms of cavities, traces of lime have been found. And thus we are able to recognize the fact that when Professor Mayr found lime abounding in carious matter, his experiments were made with a different variety of decay.

The various shades of color in this variety of caries are easily explained. When the lime-salts are first dissolved out, or, in other words, when the decay is recent, the color is light or semi-transparent, but never as white as natural tooth substance. As time advances the decayed matter is darkened by oxidation, just as are the leaves of the forest when left to decay on the ground. And so the color, in this kind of caries, is some guide for us in estimating its age and its corresponding rate of progress.

According to our own observation, this variety of caries is far more common than all the others, and, several times at meetings of societies, we have asked the members for an expression of opinion as to the truth of our observation, and in every case we have been sustained. And we feel so secure in this opinion, that we believe recent decay of this kind is meant in a statement made not long ago, though the terms "White Decay," and "The Rapid Variety," are used. The sentence we refer to is this: "Now, black decay, as it may be termed, is so rarely the subject of treatment and investigation, compared with the vastly more common white decay, that when speaking of decay simply, all writers mean the rapid variety which furnishes certainly ninety per cent. of all the business of all dentists."

Now the kind of decay in which we find the soft gelatinous matter remaining in the cavity is by no means the "rapid variety," although it is more rapid than is black decay; nor is this "white decay," nor does white decay furnish "certainly ninety



per cent. of all the business of all dentists;" for this gelatinous variety, if the term is understood, is far more frequent than are all other varieties.

But no dentist is warranted in speaking contemptuously of black decay, as though it were so seldom found that it is unworthy of notice. Several times we have counted over twenty cavities of it in the mouth of a single patient. It is often found after a typhoid attack; and in the bilious temperament it very often accompanies prolonged constipation.

We sincerely hope our young readers will closely study these distinctive traits of the several varieties of caries. These physical peculiarities are very readily observed if the observer becomes in earnest. No one should attempt to fill a tooth till he has carefully noted the kind of decay he is called to treat. In the black variety he may excavate and fill without disinfecting, and all will go well. In the genuine "white decay," he cannot be too thorough and careful with his anti-septic treatment.

In another special, and at another time, we hope to point out the diagnostic signs which will enable the operator to recognize the tendencies toward decay, and the kind of decay indicated, and possibly the course of treatment, or habit of living calculated to arrest such tendencies. And if spared for this work, we fondly hope to be able to make it as profitable if not as interesting as bug hunting, a species of amusement we enjoy very highly.

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## INFLAMMATION.

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NOTWITHSTANDING its title it is not the design to discuss, in this article, the general pathological conditions of inflammation. This we leave for our more competent contributor, GALEN. Our aim is to lead to closer thought in the consideration of the subject than it generally receives, if the discussions at our society meetings are to be taken as the standard or type.

In 1856 we read a paper at the meeting of the American Dental Convention, entitled "The Action of Topical Remedies on Inflamed Dentine;" and the title of the paper was severely criticised by a rather prominent member of our profession, who reminded us all that pain, heat, redness, and swelling, are the constituent conditions of inflammation. Then he gave the diameters



of the dental tubules and of the red corpuscles of the blood, and with an exactness not surpassed by the dry goods clerk with his yard-stick, he demonstrated that redness of the dentine could not be produced without a disintegration of the red globules, so as to set free their hæmatine, and therefore, inflammation of dentine cannot occur. Another member doubted if swelling of the dentine could take place, and if not, another point was made against the possibility of inflammation of the dentine. And it was surprising to see what a following these objectors had, both in our societies and in our periodical literature.

But, with careful thought, cannot any one see that the four mentioned phenomena are only ordinary *symptoms* of inflammation, and not the morbid state itself? Heat, light, and flame are ordinary phenomena in combustion, yet no one will claim that any one, or all three of them, constitute combustion, they being well recognized phenomena of the rapid oxidation of combustible bodies.

In like manner, inflammation lies further back, and deeper, as the cause of the four symptoms alluded to. In the normal state of animal bodies the Latin proverb, "*Ubi irritatio ibi affluxus*," clearly expresses one accompaniment, and it may be translated a little freely, perhaps, "where there is irritation, thither is a flow;" and if not obstructed, the red corpuscles will be carried by the flow to the inflamed part, and thus the redness is explained. The flow to the part being more abundant than the flow from it, explains the swelling, as well. The swelling causes pressure on the sentient extremities of the nerves, and pain results, while the increase of chemical action within the part explains the increased heat. Thus it seems plain that pain, heat, redness, and swelling are secondary things, and the morbid condition,—the disease itself lies still back of them.

Or, will it be safe to say that irritation causes the flow to the part irritated, and that when the other phenomena mentioned have had time to occur, we have the irritation changed to inflammation? This hardly seems tenable; for that would still be taking the prominent symptoms of the morbid state for the state itself.

The four leading phenomena already mentioned vary relatively as modified by the character of the tissue inflamed, and, perhaps, by other circumstances. In soft parts, where cellular

tissue prevails, the swelling is often very great, there being abundant room for expansion. Again, in highly vascular parts, the redness may be more noticeable than the other symptoms, simply because the red corpuscles can readily reach the part inflamed. And in parts highly endowed by nerves of sensation, pain may be the leading symptom; while, in some cases the nervous endowment is slight, pain may be almost the only obvious symptom. This occurs in parts not highly nervous, not very vascular, and where there is but little room for swelling. A felon gives a pretty good illustration of excessive inflammatory pain, as the finger tips are highly endowed with sensitive nerve loops, while the membranous expansion extending from the palm, binds down the tissues so that swelling causes strong pressure on the terminal nerves. An illustration of another condition is very familiar to dentists, as found in inflammation of the lining membrane of the sockets of the teeth. The periosteum is not very vascular, nor is it highly endowed with nerves, but its inflammation causes great pain because, by the consequent swelling, great pressure is made on the few nerve fibrils present, as they are compressed, as if in a vise, between the alveolus and the root of the tooth.

We have been so minute in this description that we expect to be charged with verbosity; and if so charged we shall plead guilty to the indictment. Yet through it all we have felt conscious of a poverty of expression really oppressive.

When there is inflammation of the pulp, or of its investing membranes, the pain is much sharper than when the morbid state is confined to the socket; for the tissue is highly vascular, with extraordinary nervous endowment, while it is confined by immovable bony walls. When the periosteum is inflamed there is a little room for swelling made by the tooth partially emerging from its socket, but when the pulp is involved, it has not even this pitiful source of relief.

The condition in *tic douloureux* is somewhat analagous, probably the branch of the nerve, or its meninges, being inflamed at a point where it passes through a bony canal. It is probable that the sharpest pain known to our race is to be found among branches of the fifth pair, and the above remarks probably hint at the reason.

To discourse about the treatment of inflammation would take the reader beyond the aim of this paper. Let it be said

briefly, however, that if it be true that pain, heat, redness, and swelling are secondary symptoms of inflammation, it is almost clear that the primary lesion is to be found in the nervous system, and that the first thought as to treatment is to be addressed to it.

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### DIFFICULT EXTRACTION.

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THE caption of this item seems to intimate that some extraction is not difficult. And this is true. Of course the temporary teeth, after normal absorption of the roots, are easily removed, and the operation is almost painless. In some cases, too, permanent teeth are extracted with but little difficulty. When there is but one root, and it is straight and conical, and not very large, the operation is a trifling one. A young man having successfully extracted a number of these, without trouble to himself or his patients, is apt to regard himself as an expert, and to fancy that he can extract any tooth. Coming on a case like that described in this number of the *JOURNAL* by Dr. Siddall, his feelings change, and he estimates his own abilities, and, perhaps, the character of the operation, by a different standard.

After a careful study of the anatomy of the parts concerned in the operation, a course in civil engineering would greatly advance a man's attainments in the art of tooth extraction. Such education enables a man to calculate the force necessary in the operation all the more accurately, as well as to make a more correct estimate of the direction in which the force is to be applied. And with correct knowledge in these respects, he can better judge the character of the instrument to be used in each case.

It is safe to make the general statement that, in the extraction of teeth, the direction of the force is more important than the quantity of it. It may appear egotistical to refer to it, but it is true that we once had more than the average reputation among extractors of teeth. We know that some of our brethren did not regard this as creditable. They did not like to extract teeth, and hence took but little pains to qualify themselves for the proper performance of the operation. And some of them, for the same reason, failed to supply themselves with suitable instruments. A consciousness of their unpreparedness, and possibly of their unfit-



ness for the operation, caused them to go at it, when necessary and unavoidable, in a hesitating or confused manner, which tended to shake the patient's confidence in their ability, and thus acted as a very unprofitable advertisement for them. For, if the patients found them to be unskillful extractors, they inferred, justly or unjustly, that they were equally unskillful in other operations.

On the contrary we regarded the operation of extraction as very disagreeable to both patient and operator, and that, therefore, it ought to be shorn of its terrors by all means possible, and that by the cultivation of skill and by a supply of the best constructed and best adapted instruments, very much could be done in this direction.

What reputation we had as an extractor was supposed by many to rest on great physical strength, or at least on strength in the hands and arms. Often have patients remarked, that supposing these were very bad teeth, we thought best to come to a large, strong man. Now the facts are that the muscular power of both arms was never able to raise the body even a half of an inch. And we refer to this for two reasons, first, to impress on the minds of all operators, that skill, applied through appropriate instruments, rather than physical strength, is the trait demanded to insure success; and, second, to encourage those who are physically feeble, that by proper study and application, they may become expert extractors.

The extraction of a tooth is one of the most painful operations known in surgery, while, in the present state of society, it has to be performed more frequently perhaps than all others. This is written with full memory of the statement of fanatics, that it is a crime to extract a tooth, and that the operation is never necessary. The fifth pair of nerves are capable of causing or feeling most acute pain. We have seen men mangled by machinery or riddled by bullets, bearing the pains quietly, while able to recall the fact that the extraction of a tooth caused any of them to scream like a panther. Almost any one can bear other pains better than those of *tic douloureux*. Seeing, then, that this operation involves such sensitive nerves, let us make it as little painful as is possible. None but a fiend is content to inflict needless torture.

In the case described by Dr. S. in the present number, with the first and second lower molars standing firmly in place, we



would not have caught the third molar with an extracting forceps. It was almost like drawing the keystone downward through an arch. A modification of the Physic elevator often subserves a good purpose, as it rolls the tooth backward. More frequently we use an elevator that gives double leverage, using the neck of the second molar as a fulcrum. Still, with as extensive exostosis as was present in the case referred to, difficulty is likely to be experienced. A young practitioner can resort to no better advertising dodge than the careful extraction of teeth, when extraction becomes necessary.

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### HEREDITARY TENDENCIES.

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Nor a full discussion of this subject is now proposed, but mainly the importance of taking these tendencies into consideration, in making a diagnosis and prognosis of any case brought to us, in which a young person shows decided deterioration of the temporary dental organs. Yesterday we met a young lawyer who has tolerably good, strong teeth, yet his temporary teeth were nearly all decayed in his infancy, as fast as they made their appearance. Had he been taken to a stranger for treatment of his mouth, when he was six or seven years old, the dentist would have regarded his prospect for useful, permanent teeth as very gloomy indeed. In such cases it is important to learn, from parents or nurse, a somewhat minute history of the health of his infancy. In this case he might, by such inquiry, have learned that which we knew from personal observation, as we had the care of his first dentition. On learning that he had suffered for months with *cholera infantum*, that he had endured measles, mumps, scarlet fever, and whooping-cough in the first two years of his life, with an almost constant tendency to diarrhœa, there would be no surprise that his temporary teeth were practically destroyed. But if this destruction is accidental, the result, mainly, of the several diseases mentioned, the *prognosis* in reference to his permanent teeth is bright and cheerful, in comparison with what it would be if this destruction were in accordance with the hereditary tendencies of his constitution.

The duty of the dentist, then, in all such cases, is to learn what is the hereditary tendency in each; and till he has gained this knowledge, he is not fit to take charge of the case.

When the decay of the temporary teeth has been purely accidental, and the hereditary tendency is reasonably encouraging, it is prudent and proper to fill the first permanent molars in a permanent manner, in most cases, and we can have a reasonable hope, that by proper care the permanent set of teeth may be preserved for usefulness to old age.

We feel that this subject is important,—that there is here “a distinction with a difference.” Often we have taken up cases which had been virtually abandoned by the family dentist, and have succeeded, simply because we inquired after the hereditary tendency, while it had been ignored by our fellow-practitioners.

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### A CONFIRMATION OF OUR OPINION.

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IN our long “Special” in the January number, the paper we read at Columbus, we expressed the opinion that microscopic examinations made with high powers should be taken with a good degree of allowance. Many members of the profession, by word as well as by letter, have since expressed their full belief in the correctness of the position. We regard it as of importance, inasmuch as many microscopists, but not all by any means, speak of the object seen with as much confidence as the boy uses in describing the lions of the Zoological garden to his little sister.

In the same direction with our remarks, Prof. C. N. Pierce, in the March number of the *Dental Cosmos*, pp. 122, 123, has these words: “When we come down to the borders of inorganic matter, to the beginnings of life, as it were, and with a lens representing a power of one thousand or fifteen hundred linear diameters, and an area the square of that, and these atoms possessing a constant vibrating, quivering motion, it seems almost bordering on the imaginative to attempt to differentiate these cells and distinguish between them and the disorganized and decomposing tooth-tissue surrounding them. Especially is this the case when we recognize how difficult it is to define the shape of vibrating matter when it is viewed with a lens, which, from its exalted power, necessarily cuts off so large a proportion of the light.”

The industry and energy manifested by the dental profession in taking hold of the microscope, making it an agency so valuable in scientific research, can not be too highly commended; but,

unfortunately, as with all novelties, much blind superstition has been displayed in regard to it, and the man with a microscope has been held in awe by his less fortunate comrades, regardless of his lack of ability to use it intelligently. More than one member of our profession, now quoted as standard microscopists, began, or pretended to begin, microscopic research, when they could not write an article without making more mistakes than the number of lines in their composition, and their attainments in anatomy, physiology, histology, etc., were in accord with those they had made in grammar and rhetoric.

These things ought not so to be; but if any professional brother holds the genuine researches with the microscope in higher estimation than we, we shall adopt his sentiments at once, having abandoned our own.

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## COMMENCEMENT EXERCISES.

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### OHIO COLLEGE OF DENTAL SURGERY.

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THE Thirty-seventh Annual Commencement exercises of the Ohio College took place in College Hall, Walnut street, on Wednesday, March 7th, and were largely attended. The scriptures were read, and blessings invoked by Rev. W. F. Mitchell. Appropriate music was furnished; and the degrees were conferred by C. R. Taft, D. D. S., of the Board of Trustees, with an appropriate address. The graduates are: James B. Adams, Ky.; John M. Brookins, Ind.; Horatio A. Black, Ohio; W. H. Craft, Pa.; W. H. Collins, O.; George S. Crider, O.; W. H. Clark, Ill.; W. C. Duckwall, O.; E. P. Greene, O.; C. W. Grambrill, Ill.; W. L. Jerman, O.; James H. Letcher, Jr., Ky.; A. E. McConkey, O.; F. W. Meinhardt, Wis.; A. W. Meyer, Wis.; Grant Mollyneux, O.; W. D. M. Mason, Ga.; G. W. Ostrander, Ill.; C. F. Oglesbee, O.; T. J. Phillips, O.; J. J. Kapp, O.; A. B. Stephens, Ill.; Sallie Strasburg, O.; Beecher B. Tatman, Ind.; S. E. Wilhelm, Iowa; Charles Whaley, O.; B. F. Ward, O.; Charles M. Watson, O.

Prof. H. A. Smith, Dean of the College, distributed the awarded prizes to A. E. McConkey, Grant Mollyneux, and Miss Sallie Strasburg, who received the gold medal.

The address to the graduates was given by Professor Lewis

Buffett, D. D. S., of Cleveland, Ohio, and on behalf of the class, a response by James H. Letcher, was delivered.

Many ladies were present among the large audience, which was all the more appropriate from the fact that a lady was among the graduates, and had won one of the honors. The Faculty, recent graduates, and alumni, had a social reunion at Kepler's at a later hour.

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## ALUMNI ASSOCIATION.

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### OHIO COLLEGE OF DENTAL SURGERY.

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THE Alumni Association met in the lecture room of the college, for its fifth annual meeting, March 7th, with the President, H. A. Smith, in the chair.

The following were elected officers for the ensuing year: President, C. R. Taft, Class of 1856; Vice President, C. H. James, 1856; Secretary, E. G. Betty, 1876; Treasurer, N. S. Hoff, 1876.

The Committee on History reported progress, and Drs. J. Taft and H. A. Smith were added to the committee, and the Association adjourned for a year.

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## THE SCHOOLMASTER ABROAD.

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It was not a Yankee school teacher who, in describing his qualifications to the board, said, "As a grammarist my attainments are not extraordinary, but as an arithmeticker I am hard to surpass;" but after all he is surpassed, in the mathematical aspect, by a New England dentist who figures in the March number of the *New England Journal of Dentistry*. His calculations are as accurate and reliable as was the early method of weighing hogs practiced before the rise in the price of pork, and the advent of Fairbanks. The mode was to balance a board on a rail of the fence which formed the pig-pen. The man outside held it steady till his two comrades inside caught a hog, by the ears and tail, and held it across the board. Then he would pile stones on the outer end of the board to balance the hog, after which they guessed at the weight of the stones. The principal difference in the two



calculations is that the guessing comes last in order, in the one case, while it is first in the other. And this JOURNAL *guesses* that nothing further need be said, in reference to a recent criticism.

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## Correspondence.

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"I charge you that this epistle be read."

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JACKSONVILLE, ILL., March 5, 1883.

*Editor of the Ohio State Journal of Dental Science:*

I NOTICE to-day in your article, "The nascent state of chemical reagents," March number of JOURNAL, the following statements: "Though chlorine is highly soluble in water, a saturated solution of it makes no impression on gold." Further on you say: "The point to be noticed is, that though the gold is rapidly and readily dissolved by the chlorine, under these circumstances, (nascent chlorine liberated in aqua regia) it might be immersed till dooms-day, in a watery solution of the same quantity of chlorine without injury."

This statement is not strictly correct. *A watery solution of chlorine will dissolve gold*, but not readily, nor in so large a quantity as nascent chlorine.

EXPERIMENT.—Take a saturated solution of chlorine in water, 4 ounces, add to this a sheet of No. 4 gold foil (4 grs.) rolled into a very loose rope, (two sheets of No. 2 is better) cork tightly, and set in a dark place for twenty-four or forty-eight hours. At the end of this time a test will show a solution of gold, though the foil may not have entirely disappeared. Now uncork the bottle and set it in the sun to get rid of the free chlorine. The result will be a slightly acid solution of chloride of gold, which answers quite well for the staining of microscopic preparations. I have so used it for many years. Some care is required to prevent the deposit of metallic gold in the tissues.

This slight error does not lessen the force of your article, as to the point at issue, *i. e.*, the specialized action, so to speak, of chemical reagents in the nascent condition, which is, of course, well known to chemists.

Upon consulting a half dozen authors on chemistry, in my library, only one, Regnault, negatives your statement.

Yours truly, G. V. BLACK, D. D. S.

[THANK you, Doctor! Very much obliged, indeed. He who keeps a busy man from doing mischief, is often of as much use as he who aids one when in the line of truth and duty. Will the reader turn to page 138 of the March number of the JOURNAL, and make a sentence, about a dozen lines from the bottom, read, "Though the chlorine is highly soluble in water, a saturated solution of it makes *but little* impression on gold." In trying the experiment long ago, we could detect no diminution in the weight of the foil used; but if the remaining liquid stains microscopic specimens, that ends it. We take for granted the doctor used distilled water, as it is possible to have nascent chlorine, if the water contains carbonate of lime, or organic matter. But we were replying to an association that had sneered at the idea of the nascent condition being a matter of practical recognition in chemistry; and our position is not injured. Thanks! Doctor.—ED. JOURNAL.]

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CINCINNATI, O., March 9, 1883.

*Editor of the Ohio State Journal of Dental Science:*

PRESUMING you might wish to hear from the old society of which you were so long an active member, I have concluded to drop you a line, not by any means a report, nor even systematic gossip. This is recorded as the *Thirty-ninth* Annual Meeting of the Mississippi Valley Association of Dental Surgeons.

The Association met in the Lecture Room of the Dental College, according to previous announcement, on Wednesday, the 7th inst., at 10 A. M., with the President, Dr. J. M. Clyde in the chair, with other officers present as follows: H. L. Moore, Corresponding Secretary; N. S. Hoff, Recording Secretary; and F. A. Hunter, Treasurer. And in addition to the officers, about thirty members were present when called to order. The meeting was opened with prayer by Dr. J. A. Robinson, of Jackson, Michigan. The hours for business were fixed by resolution at from 9 to 12 A. M., and from 2 to 5 P. M.

Dr. W. Storer How, late of this city, but now of Philadel-

phia, was awarded the privilege of presenting special methods of fitting artificial crowns to natural teeth, and 11 A. M. of to-morrow, the time set for the presentation.

A special committee had been previously appointed in reference to the death of the venerable Dr. James Taylor, late of this city, and one of the organizers of this Society and of the Ohio College of Dental Surgery. He was one of the first Professors in the College Faculty, and had retired from the position at one time, but after a few years of rest, he had again accepted his old position, and was one of the active teachers at the time of his death. When called on to report, the committee announced that a full biographical sketch had been prepared, and would be printed in the *Register*. Remarks were made, in eulogy of Dr. T., by Drs. Berry, J. Taft, Keely, Smith, C. R. Taft, Osmond, and perhaps others, each bearing testimony to the manly, generous, noble character of the deceased.

The Committee on the Constitution was granted further time.

The first subject for discussion was taken up, which was, "Nervous and Muscular Affections dependent on Dental Irritation." It was not discussed to any considerable extent till the hour of adjournment arrived. In the meantime Dr. Kidd, of Lexington, Ky., was admitted to membership, and Drs. Robinson and Buffett to the privileges of the floor.

In the afternoon Dr. Robinson expressed the opinion that many cases of nervous irritation, resulting in paralysis, originate from diseased teeth; and he reported cases in his practice confirmatory of his statement.

Dr. H. A. Smith thought that distant muscles might be influenced by dental irritation.

Dr. Kempton reported cases of severe suffering resulting from inattention to the teeth.

Dr. Sage reported a case of chorea—St. Vitus' dance—being cured by the extraction of the patient's diseased teeth.

Dr. J. Taft thought the subject was too vast in its proportions to receive justice in a discussion like this. It ought to be made a matter of special study and attention by all. We know but little as yet in reference to dental irritation, he thought. An injury to the tip of a finger sometimes proves fatal, and so many evils result from tardy, or difficult dentition, that he thought we all ought to give the subject the most thorough investigation.

Dr. Buffett called attention to the fact that there can be no pain without pressure on a nerve.

After a variety of miscellaneous remarks, some of them hardly on the subject, the second proposition of the programme was taken up as follows: "Etiology and Pathology of Dental Caries; Treatment by Filling."

The discussion of the first portion of it was laid over till the next day; and a paper on the latter portion was read by Dr. G. W. Smith, which was listened to with close attention. He spoke of his experience and success in capping exposed pulps, and wrote on the blackboard his formula for the capping material: oil of anise, one drachm; creosote, one ounce; oxide of zinc, one ounce; borax, one ounce. The materials must be good and well mixed.

The second day of the Association showed quite an increase of members. After the necessary preliminary business the discussion of the second subject of the programme was resumed, viz.: "The Etiology and Pathology of Dental Caries."

The chemical theory of decay was earnestly advocated by Prof. J. Taft, who referred to many illustrations and incidents occurring in his own practice, tending to show that decay of the teeth is not due to the ravages of minute parasites, but that the presence of the parasites, or germs, is due to previous decay furnishing a suitable place for their propagation.

Dr. C. M. Wright suggested that the decay is due neither to acids nor to parasites, but to their combined influence.

[Dr. W. can find an analogous circumstance in the way an unburied carcass is disposed of. It putrefies, and the green flies deposit their eggs in it. These hatch and aid in devouring the carcass; but the maggots are not the primary agents in the process.—ED. JOURNAL.]

Dr. Smith did not believe the acid theory had ever been positively established.

Dr. R. J. Porre read a paper on the subject, but I will not try to give you a synopsis of it.

Dr. J. A. Robinson, of Jackson, Mich., read a paper entitled "Effect and Cause," which elicited interest and applause. [This paper is promised to the OHIO JOURNAL, but we half fear that, in the enthusiasm of the moment, the good doctor forgot to reserve it as promised.—ED. JOURNAL.]

The hour having arrived, Dr. How proceeded to present some



new features in capping, filling, etc., and to exhibit improved implements and appliances, which occupied the remainder of the forenoon.

At the opening of the afternoon session, Dr. J. Taft formally announced the death of Dr. W. H. Goddard, of Louisville, Ky., President of the American Dental Association, and for many years previously its Treasurer,—a worthy practitioner of dentistry for forty or fifty years. Drs. J. Taft, J. S. Cassidy, and R. J. Porre, were appointed a committee to draft resolutions in reference to his demise.

The Treasurer's report was received, audited, and accepted.

The question of the morning discussion was taken up, and Dr. J. Taft called attention to the fact of teeth decaying more rapidly at night than during the day. The secretions are more abundant when awake; but the neglect of cleanliness, and the pernicious habit of sleeping with the mouth open, explain the increased nocturnal decay. He spoke of the great importance of thoroughly cleansing the mouth and teeth before retiring.

Dr. Osmond referred to the fact that during the rapid growth of children, unless proper attention is given to the teeth, they are apt to become soft, so that they are easily crumbled, and great annoyance in after life results.

"Periodontitis and Alveolar Abscess, Pathology and Treatment," the third subject in the programme, was taken up, and a paper was read by Dr. G. W. Smith on "The Inflammation Involving Teeth," giving an analysis of the regular stages of the morbid condition, from its outset to its possible terminations.

Dr. Sage recommended a more general use of the lancet than is common in combatting inflammation.

The third day of the meeting started off with a good attendance. The subject taken up for discussion was "Prosthetic Dentistry; Restoration of Features and Expression; How best Accomplished," and was opened by Dr. Berry.

Dr. G. W. Smith spoke of the irritation sometimes caused by plates, and stated that he does not use rubber.

Dr. C. M. Wright referred to the importance of careful, intelligent study of the face and features, in all their peculiarities.

Dr. Pierce opposed the use of "store teeth," and suggested, that dentists send models to manufacturers and have teeth made to order.

Dr. Smith advised the use of irregular sets of teeth, as when too symmetrical they always have an artificial appearance.

Dr. G. W. Keely paid a high compliment to Dr. John Allen to whom we are much indebted for attention to the restoration of features, as well as for continuous gum work.

As the hour fixed for adjournment was drawing near, the remaining subjects were laid over, and the Association proceeded to the election of officers, with results as follows: President, Dr. C. M. Wright; First Vice-President, Dr. H. A. Beamer; Second Vice-President, Dr. C. I. Keely; Recording Secretary, Dr. W. H. Cameron; Corresponding Secretary, Dr. C. R. Callahan; Treasurer, Dr. F. A. Hunter. The new President was presented by Drs. Hunter and Keely, and duly installed. On motion of Dr. Betty, the retiring officers were thanked.

Dr. J. Taft presented a memorial on the late Dr. W. H. Goddard, who died at Louisville, March 4th, after having been in the dental profession fifty-five years, who was one of the organizers of this Association in 1844, and was President elect of the American Dental Association at the time of his death.

Remarks in sympathy were made by Drs. G. W. Keely, Berry, and J. Taft, all setting forth, that though the deceased member had been honored by the profession, he had more than repaid all by conferring honor on the profession.

After this, a little miscellaneous business, and expressions of mutual good wishes, the good old Association adjourned for one year; and may you be there to see, is the wish of your friend,

N.EBO.

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## Societies.

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“Wherewith one may edify another.”

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### ILLINOIS STATE DENTAL SOCIETY.

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The Nineteenth Annual Meeting of the Illinois State Dental Society will be held at Decatur, commencing Tuesday, May 8th, 1883. An unusually interesting session is anticipated. Members of the profession residing in other States are cordially invited to be present.

C. A. KITCHEN, *of the Ex. Com.*

## NORTHERN OHIO DENTAL ASSOCIATION.

The Twenty-Fourth Annual Meeting will be held in Sandusky, Tuesday and Wednesday, May 8th and 9th, 1883, commencing at 10 A. M. Tuesday.

*Subjects for Discussion:* 1. Methods and Material for Filling Teeth. 2. Diseases of the Gums; Cause and Treatment. 3. Should the Operative and Prosthetic Departments of the Dental Art be separated? 4. Pulpitis. 5. Miscellaneous.

It is expected that there will be at least three papers on above subjects.

A cordial invitation is extended to all the profession.

H. F. HARVEY, *Cor. Sec.*                      GALE FRENCH, *President.*

## IOWA STATE BOARD OF DENTAL EXAMINERS.

The first regular meeting of the Iowa State Board of Dental Examiners will be held at Iowa City, Iowa, commencing on Monday, April 30, 1883. All temporary licenses expire at that date. Persons holding the above, together with those not registered and who desire to practice dentistry in the State, must appear for examination for license at 10 A. M. on the first day of the session.

E. E. HUGHES, *Secretary.*

NEWTON, IOWA.

## Books and Pamphlets.

"Of making many books there is no end."

THE DENTAL PRACTITIONER, a monthly journal. Edited by CHAS. E. PIKE, D. D. S. Published by GIDEON SIBLEY. Vol. 1, No. 1, dated January, 1883, has appeared.

It starts with sixteen pages of reading matter, and as many of advertisements. It presents a unique appearance among dental journals in having two columns to not very wide pages. It is offered at present for 50 cents a year, but when it becomes "as large as the largest, and as good as the best," as is proposed by the publisher, it ought to cost more, and probably will. To subscribe, address Gideon Sibley, corner Thirteenth and Filbert streets, Philadelphia, or send your money through Ransom & Randolph.

# OHIO STATE JOURNAL

—OF—  
DENTAL SCIENCE.

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No. 5

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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## VALEDICTORY ADDRESS.

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BY PROF. L. BUFFETT, M. D., D. D. S., CLEVELAND, OHIO.

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(To the Graduates of the Ohio College of Dental Surgery.)

“All the world's a stage,  
And all the men and women merely players,  
They have their exits and entrances.  
And one man in his time plays many parts.”

You, members of the graduating class, have been upon this stage, and have played your part so far in the world's great drama.

Your first act was played before you commenced the study of dentistry, in the laying of a foundation for a professional life, consisting in that mental discipline that would enable you to comprehend and utilize that which the teachers of this Institution have been endeavoring to impart to you during your collegiate course.

Upon this primary education, much of your future success depends. To erect an edifice that will withstand the storms of time, it is necessary that it be built upon a good foundation, upon



a rock, and not upon the sand. And the question we would now ask is, How did you lay this foundation? Is it broad and deep? Is it all that could be desired? To the first we hope you can answer, Yes. To the second we trust the reply will be an emphatic No!

Much more could probably have been accomplished if all the opportunities had been improved as they presented themselves to you. If you are perfectly satisfied with what you did accomplish, it will probably be very easy to satisfy you in regard to professional knowledge and scientific attainments. On the other hand, if there is a strong desire and an honest effort to make up for lost time in those fundamental principles that underlie all of our mental acquirements, then we have much to hope for in your acquiring a professional education, and of making a success in your various undertakings.

The second act consisted in the private pupilage, as you entered upon the study of the profession you have chosen to follow. This will prove to be an important period in your lives. It is no small matter for a young man to decide what shall be his future calling. So many questions arise as to his fitness, and the probable success. You have undoubtedly asked yourselves, can I make a living, can I acquire enough after years of practice, to be independent of others in my declining days? The financial question stands out prominent, and with some it is the only thing taken into consideration. It should have full attention, but at the same time, the good we can do to others and the world, ought to be the modifier, the balance wheel, as it were, of our thoughts and actions. The best deeds that are done, are not done for the dollars and cents they will bring, nor for selfish ends, but because the acts are good of themselves, and humanity is benefited thereby.

You were undoubtedly led to engage in the study of dentistry from different motives; some from a higher and nobler purpose than others. And if all have been fortunate enough to have had true honest instructors in private pupilage, then the work that lies before you will be much easier to perform. False teachers always have been, and always will be, a curse to the world, no matter in what garbs they are clothed. We hope you can review with satisfaction and pleasure, the associations connected with your first steps toward the profession. The impressions then made will always last; the instructions then given, if good, have helped

you much ; if not, you have probably found out, to your sorrow, that it is more difficult to unlearn, than to learn.

It is necessary that he who expects to rise to any prominence, must have a mind capable of expanding, unfolding, and weighing such problems as will fit him for the calling he is to follow. With such a mind, and a careful judicious training, the first acts will be well played.

You played these parts, and then came to the Ohio College of Dental Surgery to play the third ; and by your presence here to-night, we judge that they have been well played. Some have succeeded better than others. Your minds have not all been alike, differing in one way by an inheritance, for which you are not responsible, by material conditions which may not have been under your control, and where these conditions were such, that you have been deprived of proper preliminary education and private instruction, to that extent you have been placed at a disadvantage.

Here all have been on a level. Those that have failed to store away for future use that which has been taught by the professors, have only themselves to blame ; but by granting you the honors in conferring the degree of Doctor of Dental Surgery to-night, the professors say that you have done well. Whatever regrets may come up, there are many others older in the profession who can with you say :

“ Of all sad words of tongue or pen,  
The saddest are these, ‘ It might have been.’ ”

Yet success is oftimes attained only after repeated failures, and from the neglected past we are stimulated to noble efforts for good.

It is not my intention to criticise your past work, much less to act as judge. You have undoubtedly felt, during the last week, that you were before the bar of judgment, but it is well. Peter has opened the gate, and you are allowed to enter.

The fourth act is your professional career, having qualified so that you can be acknowledged as belonging to the profession, receiving advantages that a few years ago could not be obtained, and that in the memory of some present to-night. The last half century has developed the profession so that it is fully recognized as belonging to the healing art. Much, very much has been accomplished during this period, by the honest workers. Many

have passed away; some who are still in the harness, can count nearly the fifty years of practice, and to them all honor is due; they have labored under some difficulties of which you will know but little. You now commence where they leave off in theoretical knowledge. The experience of years is their stronghold, this is now for you to commence to obtain. Yet do not for one moment think you can stop your course of study, and still keep abreast with the times; if you do, in a little while you will be in the background. You must be investigators, thinkers. Let your reading be broad, covering every department of medicine and surgery, that has in any way a bearing upon dental science.

You will soon find that there is but little that you can afford to leave out. Not that you are to be experts in the various departments, but obtain knowledge in them so you can be experts in dental science. You cannot drop anatomy, nor chemistry, nor physiology, nor materia medica, nor surgery, nor principles and practice. Neither can the microscope be left out; they all belong to you, and a careful, continued study of them will make you better dentists, better thinkers, better men.

If every graduate, from whatever Institute, could be made to feel that his education was only commenced, instead of being at an end, there would not be so many failures, so many disappointments. In five years from to-day, you will probably not feel quite so sure of possessing all the knowledge you imagine you now possess. Should it be yours in reality at that time, you will honor your alma mater by your attainments.

The calling that you are now about to enter upon, is one that will afford ample room for thought and action, and to succeed, you must expect to devote all of the time that health will permit. Better not engage in other pursuits, for you can not do justice to more than one. It will be about as difficult as to think two thoughts at the same time. The old saying about having too many irons in the fire, may well be heeded. Master one profession well, and your chances of success are much greater. Recreation is needed, and if properly taken, you will be able to accomplish more than if you confine yourselves too much to the office. But be sure that it is recreation, and not dissipation. Recreation carried to excess, would be dissipation. Our minds should not be too much taxed by cares; we should at times have rest, and follow nature's laws in living. Live so that the best mental, physi-

cal and moral health will be developed. Inroads made upon one, the others will suffer thereby. It is very hard for a dyspeptic to be a saint only in his own diseased brain; and should any of you imagine yourselves saints, do not imagine that therefore you are good dentists. But I believe, on the whole, the profession does not lay any great claims in this direction. It is progressive, and much may be hoped for in the future, from the new actors upon the stage, in all that pertains to its growth and development.

See to it that you do each your part well. Yet, judging the future by the past, we know that your careers will differ very much. A few will, by continued study, arrive to prominence, and wield a wide-felt influence for good; some will be fair practitioners, and pass along through life passably well, and be contented and comparatively satisfied with themselves; others, I fear, will drop by the wayside, and be of no benefit to themselves or the world. This is about the brief history that can be chronicled of each class. Yet we hope that this one may be an exception to the general rule, and that all of you will prove yourselves good men in the profession.

Your future is about what you are willing to make it. It lies within yourselves to succeed or fail. You must depend upon your own resources, and not hang on the skirts of others. Be self-reliant, but not conceited. Listen and learn, appropriate all that is good, and give freely, from your store of knowledge, to those who are deserving. Withhold nothing from the profession that would be of benefit.

The days of secrets and of charms in the healing art are past with those who are honest and enlightened. And where found to-day, they are the property of the quacks and the dishonest; and the ignorant and superstitious are their victims, from whom they gather their spoils.

Be gentlemen in dealing with your patients, and treat other practitioners as you would like to be treated.

Guard well your words, so that you do not, intentionally or otherwise, wound the feelings of a more sensitive fellow practitioner, or any one with whom you may be brought in contact. A coarse-jesting, unfeeling man, has no place in any department of medicine, in fact ought not to be tolerated in good society at any time. By being thus considerate, you will make your presence not only agreeable, but sought after, instead of being shunned. Let not



curiosity lead you to forget that professional lines should not be broken over. In other words, attend to your own business. You will have enough to do if you attend to that thoroughly. And do not make it your business to know the facts of every scandal that is going on, and much less to be the means of circulating the same, and perhaps giving it a coloring to suit your own imagination.

Disgrace neither yourselves nor the profession by resorting to newspaper advertisement, printed circular, and the like, or by underhand means of presenting your wonderful attainments, to induce people to patronize you. Firmly resolve, that a straight forward course shall mark your career through life. Stand or fall as it may be, the satisfaction will be yours, of knowing that you have done right, which will be a greater recompense than a little more money, obtained by questionable means.

You will have many difficulties to surmount, but a patient, determined effort will carry you through. One difficulty overcome, you will be stronger to meet the next.

Let your views be broad and liberal; and do not feel that those who are a little in advance, are your enemies. A narrow, contracted mind, looks with envy upon the success of others. You will meet some cranks in the profession, who will kindly advise you, that to succeed it is necessary to follow a certain line of practice, adopt particular instruments, in which they are interested. By so doing they will commend you highly. Reject them and you will not amount to much in their estimation. Yet there can be no doubt, that many of them are honest, and should not be censured on account of their unbalanced brains.

Calls at your office will often be made by manufacturing agents, who will bore you, more or less, by exhibiting their goods, with the highest kind of endorsements. At the same time an opportunity will present itself for gossip, if so inclined. The man with nothing to do will also be very willing to help while away your leisure time, before you obtain a full practice, and even when taxed to the uttermost, he will not value your moments any more than he does his own. It will be the part of wisdom to transact such business with them as you may deem best, quickly, and let them go their way.

The office is your *sanctum*, and should not be a lounging place for others. It is for work and study.

Your patient's private affairs should not be meddled with, only so far as you are professionally interested, and the confidence then given, should be kept sacred.

Another part, that you will undoubtedly play, is that of instructor in some capacity. Students may be under your care, and as so much depends upon a proper bent being given at the very outset, this relationship should not be entered into without due consideration. The student's fitness in regard to preliminary education, ability to concentrate thought, and labor for the desired end, so that they will continue on and still on with their studies, although the end will not be reached, as long as strength remains. If time and proper attention on your part cannot be given, then, as honest men, you have no business to enter into such a relation as preceptor to them. Students, to a great extent, reflect the character and ability of those with whom they study. It is seen in their manners, in their honesty of dealing in and out of the profession. Not but that many dishonest students, by inheritance and by association, become students of good honest dentists, and good honest students place themselves under quacks and dishonest practitioners. Yet the influence of preception over students is so marked, that the most careless observer cannot fail to recognize it. It is undoubtedly felt to a greater extent in our special department, than in general medicine.

Fail not to do your whole duty to those that place themselves under your direction. By so doing the standard of dentistry will be raised. You will not only then play your part well, but be the means of inducing others to do the same.

You will play your parts through active life, and then a shifting scene, when active work must in a measure cease. If rightly spent, declining years will find you well prepared. One has said of old age, that a healthy old fellow that is not a fool, is the happiest creature living. It is at that time of life, only men enjoy their faculties with pleasure and satisfaction. It is then we have nothing to manage, as the phrase is, we speak the downright truth; and whether the rest of the world will give us the privilege or not, we have so little to ask of them, that we can take it. Yet advanced years need not entirely prevent us still exerting an influence for good. Health and strength may still remain; and idleness will not bring happiness.

The seventh and last act, which is the closing scene of life, we

all must play sooner or later. Other acts may, perchance, be dropped out, but not so with this; the laws of death are fixed, a separation of mind from body must take place. One is resolved into the elements from which it came, to be again and again united into other forms of animate and inanimate matter. The other passes to an existence of which we know but little. Theorists and dreamers attempt the solution, but their weakness and insufficiency are made more and more painfully manifest, at each attempt.

If we firmly believe that all shall receive their reward, then the acts here should be well played, each doing at the present his full duty, according to the light and knowledge he possesses. Then all may be well. Bryant most beautifully expresses it, when he says:

“So live, that when thy summons comes to join  
The innumerable caravan that moves  
To that mysterious realm, where each shall take  
His chamber in the silent halls of death.  
Thou go not like the quarry slave at night  
Scourged to his dungeon: but sustained and soothed  
By an unfaltering trust approach thy grave,  
Like one that draws the drapery of his couch  
About him, and lies down to pleasant dreams.”

And now, as you go forth to your chosen labor, remember that the hand of friendship will always be extended to you, by true professional men, as long as you are true to the profession.

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## BABES IN THE WOODS OR “MEDICAL DENTISTS.”

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BY C. M. WRIGHT, CINCINNATI.

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THERE seems to be, throughout these fair United States of ours, a disagreeable undercurrent of discontent in the waters of the dental profession, that every now and then violently agitates the surface. It may be that this wildness of the waters occurs only when there is shallow water and a rough bottom, and that, where the surface is placid, we may find by deep sounding a better condition. Let us experiment, and by casting our little lead, try to discover reasons. We find, then, in shallow water, that the dentist



does not respect himself. He is half ashamed of his profession. He is discontented with the *name* of his calling. He does not value the thing he has, but pines for that which he has not. He does not regard his degree of Doctor of Dental Surgery, because it is a badge of "partial culture," but glorifies the degree of Doctor of Medicine. As we examine more carefully, we find him hanging around the back door or sitting on the front steps of the temple of Hygeia, thinking about Galen, Hippocrates, Paracelsus, and waiting and hoping for bows of recognition from modern members of the medical profession as they pass boldly in and out of the temple. We find him in the ridiculously pitiable condition, minus the humor of the tramp, who pulled the door bell of the great house and said, to the footman who appeared, "Be good enough, my *dear* sir, to inform the honorable lady and gentleman of the house that I regret exceedingly my inability to dine with them this evening." "Go to the devil!" shouted the lackey, "you are not invited!" "Why, certainly, that is the reason I can't come."

Again we find him "going in for the medical degree," as the English say, in any way he can; not that he may be wiser and better, and that he may know more about chemistry, physiology, pathology, and therapeutics, for the benefit of his own understanding and patients, but that he may acquire the *name* of a medical man, that he may have the title of "M. D." We find that when a dentist has, by any means acquired this right, he takes great pleasure in writing his name, and spends much time in reading his sign. He holds himself a little more confidently when he addresses dentists. He stands up, now, on the steps of the Goddess's Temple, leans against the door post, watches with more assurance the eyes of the real M. D.'s, and nods to them less modestly than before. He talks more about "medically educated dentists." He sometimes depreciates dental schools, and speaks of odontological *chairs* in medical colleges. He says dentistry, like ophthalmotherapia, is a "specialty of medicine." He repeats this very often—"specialty of the healing art." These phrases get bandied about among dentists, and, as the spermatozoid by persistent motion may be lucky enough to penetrate the micropyle and fecundate the ovum, so these floating, senseless sayings often find entrance to unthinking dentists' brains, and fecundate. They breed the trouble that we have mentioned, are the causes of the commotion, the discontent, the



unrest; and although these disturbing elements do not effect the smiling surface of the deep, they destroy the general harmony. It makes navigation for the dental bark a little more uncertain.

We cannot help this, except, perhaps, by more careful soundings, and a more thorough knowledge of the nature and effects of the undercurrents. Suppose we, then, drop our lead again, and find out how the "dominant profession" regards all this. Ah! here we have some muddy water. Our undercurrent, however, seems to have no effect. While the water is far from clear, in many respects it is clear enough for us to see that the *dental* unrest does not cause a ripple. Absolute indifference, on the part of this profession, seems to be the rule. If the man on the steps will go through the regular course and obtain his M. D., the regulars will nod to him condescendingly as they would to any one, even the janitor of the college who is respectful to the faculty, and is proud to consider himself as "connected wid the profession, sah!" They will create a "section" in a medical association for him, and let him talk there with others of his own standing, of things the doctors know and care but little about. The possessor of the "M. D., D. D. S.," however, feels happy, and is ambitious to get nearer and nearer to the medical profession, and farther and farther away from the dental; and the doctors will let him do more and more for them under certain restrictions. They will play Turveydrop, and permit themselves to be loved and admired for their *deportment* by the little Jellibies, and the poor little dancing apprentices who are melted to tears by the kind and condescending *recognition*. The little ones gratefully accept restrictions, and with eager earnestness adopt codes and principles of practice, based on the customs and traditions of the older and quite distinct profession. They *call* the plumping out of an old woman's withered cheek with vulcanized rubber, a surgical or medical case, and feel quite encouraged.

Well, now, let us try another cast of the lead over there among the people, where the fish, which supply the tables of both professions, are swimming restlessly about. Here we find even greater indifference than before, and both to the muddy water and to the troublesome undercurrent. The only questions that seem to interest these queer fish at all are, "What is the quality of the *bait* offered to *us*?" "Will the doctor cure aches and pains?" "Will the dentist fix our teeth so that we can eat, and

that our mouths shall look pretty?" "Where can we get all this the cheapest?" Our personal dignity requires us to draw in the lead right away. Such carelessness, such selfish and low motives, such stupid indifference, are, to say the least, not complimentary and very surprising, after all that the ancients have done for medicine, and all that science has done and is doing for dentistry. Well, what have we learned by our soundings? Let's meditate. Is this dental discontent the natural exuberance and sanguine ambition of a healthy condition? or is it the result of a pathological state? Is it from a yearning after more knowledge, higher culture, greater usefulness? or are the motives false and hollow, and the desire a depraved one—a desire to be *called* what we are not; to seem what we cannot be; to pretend to a position won by others, that does not and should not by any sort of right belong to us, and is not in any sort of way necessary for us? It seems to me at this time that the true pride and true ambition should be to make the name *dentist* as noble as the name physician has become by centuries of honest work. Our profession is very young and has no traditional greatness, no mantel of wisdom from the past to fall upon its shoulders, but we have no record of follies and of dark ages. It seems to me to day that it would be far nobler for us to continue, without fainting by the way, and try to do our whole duty in our own ranks as dentists, than to try to borrow a corner of the mantel from the older profession; to sink our identity, our literature, our schools, that our young Republic inaugurated, that our fathers in this country struggled for and left as legacies to us, that foreign countries have admired and respected and are now imitating, that other professions have cordially *recognized*, so long as we have proudly been dentists and not tried to consider ourselves "*specialists*." Our whole duty! What a vast thing this is! All that science can offer we can select from and use as dentists. Learning, great learning would not be amiss in a dentist. Art now weeps over our neglect of her, but the deeper our studies in art, the better dentists we might become. This is not simply bad rhetoric. Think of it awhile and ask yourself, reader, if a little more or a great deal more learning in almost any department of science and art, would not be of advantage to any *dentist*. He who has studied and thought most, knows best how much there is that he ought to know. Does this not point out the way to honor and

respect for us? Isn't it plain that the M. D., D. D. S., and the title added, that Dr. Panglos considered so "very appropriate," viz.: A. S. S., do not really make us lions no matter how well the skins may fit?

We are dentists and *not* physicians. Our art is quite distinct. Our degrees are as good as the physicians', and we have three or more all meaning the same thing; *i. e.*, *dentist*—the D. D. S., the M. D. S., the L. D. S., the M. D. S., and it depends on us to make our degrees respectable, as it does on the physician to keep his respectable. But suppose we do really wish for the particular respect of the medical profession, as our studies naturally include some of the studies of the physician. The medical schools have no monopoly in chemistry, anatomy, advanced physiology, the principles of pathology or microscopy, and do not, could not, in any way, object to our use of these sciences, for the advancement of such parts of medical science as belong to dental science and dental art. The clear minded and competent dentist has and will continue to have the *full* recognition and the respect of all but the snobs in the medical profession. Wise surgeons in Europe and America have so far believed in the skill and knowledge and *tactus crudetus* of dentists, that they trust themselves and their families to the care of men without the title of M. D., and willingly consult with them in regard to the diagnoses of odontomes, dentigerous cysts, dental exostoses, facial neuralgias, alveolar abscesses, some obscure forms of stomatitis, etc., also ask for help in the invention and application of interdental splints, obturators, etc., and for assistance in the mechanical treatment of closure of the jaws, so-called maxillary anchyloses, etc., etc. Intelligent medical men recognize, with pleasure and gratitude, the skill and knowledge of the *dentist*. When we begin to meddle, as *amateurs*, in obstetrical practice, or general practice, these intelligent physicians will soon find us out, will soon find out our incapacity for what we may *pretend* to know and don't, and will lose confidence in us as *dentists*. Just as we have opportunities sometimes of laughing in our sleeves when an indiscreet, but would be wise, physician talks dentistry. We lose confidence in the man's knowledge of general physic, when we hear his blundering mistakes in the anatomy, pathology, and therapeutics of an aching molar. *Mutual* respect demands that each should confine himself, as the good shoemaker does, to his *last*. Dentists! stick



to your trade! Honor your title! Encourage dental schools! Let medical men look after medical schools, and philosophers after the philosophical schools. All science is open to us for cultivation. Dead and living languages are not sealed books to us. The highest cultivation of the intellectual faculties would only benefit us. We could fill teeth and make plates better, much better, the deeper we had drunk from fountains of knowledge. I should trust a practical dentist who knew Greek, rather than an uncultivated boor. Let us all unite, then, in encouraging the babes in the woods to come out from the shadows of the "parent tree," and to look at the sunshine in the future that awaits them, if they will do their duty in the place God has placed them. If they want to be doctors and not dentists, let them, but don't let them spoil two noble and respectable and *distinct* professions. If they want M. D. to their names, let them have it. Let them be doctors of law, doctors of philosophy; doctors of divinity, if they cry for these things, but teach them kindly that doctors of dental surgery are men who are in earnest and know what honest work means, in their own distinct profession.

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## OHIO COLLEGE OF DENTAL SURGERY.

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BY A FRIEND.

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THE readers of the OHIO STATE JOURNAL OF DENTAL SCIENCE are, perhaps, particularly interested in the progress and success of the Ohio College of Dental Surgery: 1st. Because so many of them look upon this college as their *alma mater*; and good sons are usually interested in the behavior and reputations of their foster as well as their natural mothers. 2d. Because of its location in the near neighborhood of so many of these readers; and, as one great criminal may affect injuriously the good name of a neighborhood, by making an otherwise quiet and unostentatious place notorious, so an institution devoted to the dissemination of knowledge, in the departments of general education, science, religion or art, *does* affect, favorably or unfavorably, according to its standing, the general reputation, even of people in no way connected with the institution, but who may happen to be living in its vicinity. Therefore, dentists who are known as "Ohio



mén," and dentists who have certificates from this college, whether they may now be found in Maine or Texas, have, as we may believe, a *natural* interest in the Ohio Dental College, in her reputation among other dental colleges; in her good name, at home and in foreign countries; in her high standing among all kinds of professional schools. To the readers of the OHIO JOURNAL, then, we take pleasure in stating that the school is highly prosperous. The trustees are prominent dentists, who keep alive an active interest in the welfare of the school. The faculty are energetic and enthusiastic in their work. The standard of acquirements for graduation is as high as that of any dental or other professional school in this country. If we can believe all that has been written on the subject of dental education in America during the past few years, we must acknowledge that the *ideal* dental college has not yet been established with a working charter from any State. The dental college of the future depends entirely upon the coming dentist and the coming dental student. When the profession and the people of the United States demand higher culture from the *beginner* in this profession, or the medical, the schools will supply the demand. When students enter the professional schools with minds trained in perception, attention and memory, and stored with elementary principles from the literary colleges of the land, the professional schools will supply, during their regular courses, what would now only be profitable in post graduate courses. The manufacturer of a silk purse requires a preliminary manufacture of the silk, and there must be silk-worms. In the absence of silk-worms (or book-worms), the professional schools for law, medicine and dentistry of the United States have done wonderfully well, with the material they have had as a substitute; and their work has compared very favorably with much of the work done with the regular material by the older and more dignified universities of the Old World.

The Ohio Dental College is doing good work, and although commencement exercises are not evidences of the work itself, they are often evidences of the activity of the workers. The thirty-seventh session closed March 7, 1883, the final exercises were held in College Hall, on Walnut street, Cincinnati. A large and attentive audience was assembled. Piles of floral offerings from friends to the lucky students decorated the stage. Music

lent her charms to the evening's entertainment, and twenty-eight formidable, legal looking documents, in sheepskins, lay upon a table—certificates to that number of the class, which had, with the usual quaking of knees, cleaving of tongues, fluttering and sinking of hearts, passed the ordeal of a rigid and fair examination. We give a programme of the exercises. At the close of the entertainment the Alumni Association retired to "Kepler's," where a large number of the old and the new-made doctors of dental surgery enjoyed a few hours of social pleasure over an elegantly appointed supper.

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We requested a friend to tell us something of our *alma mater* and her doings in her maturer years, and he has complied as above; but we were sorry the paper did not reach us in time for the April number. It would be strange if we should cease to feel a warm interest in the college, after having received its award of competency, and having labored in it for so many years. Our friend sent with this a programme of the closing exercises, which we omit now, in view of what was said in a former number.—ED. JOURNAL.

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## FORCEPS VS. MEDICAL SCIENCE IN INDIGESTION.

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BY CHAS. A. MURRAY, D. D. S., DELPHOS, O.

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LESS than a year ago a lady presented herself at my office, and from all appearances had just arisen from a long sick spell. She had in her arms an infant, six months old, and a *fac simile* of the mother physically and constitutionally. And thus she spoke:—"Doctor, for two years I have been under treatment for neuralgia and dyspepsia, and not a day has passed over my head in that time without taking medicine of some kind. Now, of course, I don't expect *you* to do anything for the stomach trouble, but my neighbors advised me to go to a dentist with my neuralgia, as they always had on hand liniment of some kind to relieve it." I requested her to take the chair, and the first whiff I got from her oral cavity outdistanced sulphureted hydrogen. Words fail when I attempt to describe the condition in which I found her mouth. The twelve molars were off at the gums, leaving a cup-shaped receptacle for debris. The remaining teeth were abso-

lutely encased in tartar, while the membrane of the mouth and throat, as far down as I could see, was highly inflamed. Here we had the root of the whole evil, dyspepsia and all. I was, therefore, enabled to inform her, with perfect confidence, that I could cure not only her neuralgia, but the indigestion as well. I removed the molar remnants, thoroughly cleansed and polished the remaining teeth, and prescribed a simple mouth-wash—sulphuric acid, 1; aqua, 10;—since which time, she informs me, she has had perfect health. Now, this lady had been under the care of the *learned medicals* for two years; medicals allopath, medicals homœopath, and medicals eclectic, had taken all the concoctions known to the different schools, and yet a set of S. S. W. forceps cured her. How is this for medical diagnosis in indigestion! Another instance: A leading Esculapius brought to my office a patient who had suffered about three years with a chronic abscess, and requested me to destroy the nerve. Now, Mr. Editor, I don't believe this ignorance, with regard to dental pathology among our M. D.'s, is confined to one locality, but is general. Don't you think it time our profession was recognized as a branch of medical science?

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## ANTI-EXTRACTION.

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BY WM. N. MORRISON, D. D. S.

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[Read before the St. Louis Dental Society, 1883.]

YEARLY there are extracted, by the bushel, teeth and roots, firmly set in the jaws, susceptible of repair, and capable of performing a duty and service ten times greater than that of the best artificial substitutes. A patient with the toothache can not take a calm, sensible view of the situation; of the irreparable injury, not only through the loss of that member, but by the change of position the others will take, and the unavoidable loss of the use of its opposing fellow. Out of one hundred teeth extracted daily in this city, ninety-nine should not be extracted, but should be carefully and painlessly cleansed from soft decay at the margins (not over the pulp), and filled with some non-conducting cement, and kept filled, imperfectly though it may be.

There are many persons, mostly ladies, who wear jewels and pearls and expensive clothing to beautify their exterior, while



they intrust their pearls of an inestimable value to the hands of the most inexperienced, cheap dentists, and get his cheapest wares at his cheapest price, and then go abroad and boast of the amount economized in their dental bills, when one glance at their faces, and one zephyr from their mouths are most convincing that their dental services were most dearly bought at the expense of their beauty and health. The worthy cheap dentist has a fruitful field, and can do an immense good if he would confine himself to legitimate cheap dentistry, without mentioning an arbitrary fee for gold work, not equal, in many cases, to half of what the material used would cost.

The patient, young or old, should be told how to brush and pick, and rinse his teeth, and this fact impressed upon him, that teeth decay only from the outside, and for want of proper care and cleanliness. Dentists make their living out of their patients' neglect and ignorance of the correct laws of hygiene, just as physicians do. With our advanced knowledge of the worth of good natural teeth, and the present improved instruments and facilities for treating sensitive cavities in all positions of the teeth, in a comparative painless manner, and the numerous materials for filling such cavities, each good in its place, there is no truth in the saying that any tooth or root can not be filled. All turn-keys, forceps and extracting screws as constructed to remove firm teeth or roots are barbarous relics of the Inquisition. For years I have extracted teeth or roots only when they were so loose they could be removed with the thumb and finger, and I most heartily wish every other member of the profession would adopt that rule. They would be gratified at the conservation and restoration nature can accomplish. There should be no artificial dentures made by the future dentist. The artificial leg and arm maker could increase his business with as much justice by recommending the amputation of all rheumatic and neuralgic limbs, by the aid of gas, and starting out his victims with his substitutes, which bear the same relation to the natural limbs that the best dental substitutes bear to the natural teeth—shortens his life by many years. Consider for a moment thirty-two natural teeth, in normal jaws, capable of being brought together with a pressure of four hundred pounds to the square inch upon a morsel of meat (tough Texas); then the involuntary swallowing of the juice, leaving the solid fibres dry and empty to absorb the secretions, like a sponge,



from the glands whose ducts open at that part of the mouth. The morsel so saturated with normal saliva is almost digested without the action of the stomach upon it. Such persons rarely realize they have a stomach. Then contrast with that the poor old receptacle of dyspepsia's remedies. The sallow complexion, hollow eyes, and hollow jaws, with artificial teeth half the size of natural ones, and only twenty-eight in number, resting on a spongy gum, instead of being anchored three-quarters of an inch in the bone, covering the membranes and tissues with which the food ought to come in contact, brought together with feeble force in an up and down motion only. Mastication, in the true sense, can not be performed with artificial teeth. Little squares of meat are rolled around in the mouth, and may have a few holes punched into them, but are sent nearly whole into the stomach, thus compelling that organ to perform two offices—that of mastication as well as that of digestion. This is a subject the public have entirely overlooked; and the mass of dentists, if they have given it any thought, and know its direful results, do not exert their best energies to correct the evil.

Legislative enactments will not correct the evil so long as the physicians can extract teeth *ad libitum*, and dental shambles advertise that all their employes are dental graduates. In all State bills for the regulation of the practice of dentistry there is an exempting clause which states "Nothing in the bill shall prevent physicians from extracting teeth." The average physician knows no more about treating a case of common toothache than a last year's bird's nest. If he has a talent for surgery he will extract; if he is of the timid *materia medica* type, he will write a prescription and send his victim to the nearest drug store, never looking into the cavity of the tooth to see what produces the ache, which comes always from pressure on the pulp (or nerve), impacted food or gas from decomposed pulp tissue, confined in the pulp canal. If from the first cause, relief may be given by simply removing the food, cleansing the cavity, and closing it with a pledget of cotton saturated with sandarac varnish. If the ache is caused by the mephitic gases, an opening into the pulp chamber will give immediate relief. All the decomposed pulp tissue should be removed, and the canal stopped temporarily with cotton and creosote. If it is a case of abscess, open at the same time as a simple abscess on any other part of the body.

The same general rule applies to the children's or deciduous teeth. If they are carefully cleansed and kept free from decay, they will drop in their proper time as do the leaves in autumn. When the pulps are dead, and the crowns occlude against their opposing fellows, I snap the crowns off with excising forceps, and keep the roots ground down, but leave them in the alveolus as wedges, which increase the arch. More cases of irregularity of the permanent teeth can be traced to extraction of the deciduous teeth than to any other cause.

Now, as long as the law on this subject stands as it is, the very point that should be protected is thrown open, and everyone is allowed to extract teeth, regardless of any knowledge on the subject. Make it punishable by fine for anyone to extract a firm tooth or root, and welcome every one or every instrument and material that will save teeth, and you will, by these means, promote health and prolong life to this city, and to the State of Missouri.

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IN THE TREATMENT OF ALVEOLAR ABSCESS, IS  
THE PASSAGE OF AN ESCHAROTIC, OR EVEN  
DISINFECTANT BEYOND THE TOOTH  
APICES IMPERATIVELY REQUISITE?

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BY FRANK BREWER, SAN FRANCISCO, CAL.

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WE reply most negatively ! and why ? Not simply because we regard contact of all *undiluted* escharotics with the pericemental (*i. e.*, periosteal) tissues most fatal to their integrity ; but an experience in treating alveolar abscess, embracing a period of over a quarter of a century, particularly the more intimate during the last fifteen years, fully substantiates, in our mind, the fact that *all* cases curable through any form of medicinal application, be it "escharotic," "disinfectant," or but a simple *deodorizer*, may become as fully susceptible through the mere influence of their *volatile* virtue as possible by contact of ingredient, *i. e.*, the usual form. Not only that, but as well have we found also, that the results, based by analogous comparisons, are more favorable to a permanent convalescence, and cases seemingly complicated become reduced to simplification.

So sensitive were we to the *permanent*, as well as temporary injuries evinced through contact of "carbolic acid" or "creosote" with exterior human tissues, especially the more discernible with cases attempting their own palliation while laboring with "Odontalgia," that we determined over fifteen years since, when employing those ingredients in treating tooth-abscess, not only to dilute their power of causticity, but also modify the process of their application, by *invariably restricting* their presence *within the root canal* of the affected tooth, thus thereby entirely avoiding the most serious customary manual exercise of violently forcing, *i. e.*, pumping, the caustic in and upon most *vital* tissue! Hence we deem it proper to place upon record the fact, that during the period mentioned, not *one* drop of those fluids named, nor any other "caustic," "antiseptic," "disinfectant," or even "*deodorizer*," has been *intentionally* passed through, or beyond the apices of any tooth so affected; nor have we been *compelled* to so pass, even though our case presented advanced chronicity. But under *all* stages presenting a possibility of convalescence, and where the osseous walls remote from the alveolar parieties were not involved, the boundary line of lesionary termination has been reached! and we most unhesitatingly pronounce the mastery no more insurmountable than that with the usual course. This will also embrace conditions more advanced and deemed *permanently* incurable. But these were merely experimented upon in order to ascertain the extent of volatile efficacy upon conditions complicated. Cases successful, and we mean permanently so, or at least of six and seven years' standing, and now under our constant surveillance, will not only embrace those conditions termed blind abscesses, or those (in error) pronounced *self-curable*, but as well those presenting an absence of a fractionary segment of cemental apical periphery, as well as those whose chronicity extended through a period of from three to five years; and that, too, in several instances, where the exterior outlet of "*fistulæ*" was quite remote. The method of application of medicants as pursued by us consisted merely of a pledget of cotton placed at the apical third of the affected root, the canal being *enlarged* when found *inadequate* to such admission, the dressings being changed as occasion required. In the selection of a medicant, those customary escharotics, carbolic acid, or creosote, or again, that of iodine, were not alone indulged, but many far milder "disinfectants,"



and as well, "*deodorizers*" were favored, among which I mention chloride of lime water, Florida do., orange do., essence, as well as oil of lemon, same of cinnamon, sassafras, peppermint, essence of coffee (the latter equally efficient); again, paregoric, also "Eucalyptus," and what may perhaps prove more novel to my readers, simple dressings of unmedicated cotton! Though in its literal sense I stand corrected; for the cotton being absolutely absorbent, did contain an especial factor or, if you please, *two*, which in my most humble judgment, proved most efficient in neutralizing and diffusing the gasses constantly exuviating, following "*stasis*" and cystic degeneration, and which even though maxillary aperture be effected, and the apical root entrance be immediately sealed, *still remain, exerting their toxic influence upon the involved tissues.* The factors alluded to (combined) were oxygen and hydrogen, or *atmosphere*! Although my reader may fail to perceive any especial healing virtue among many of the above ingredients named, still, nevertheless, the motive sought was fully achieved, and the hypothesis of the author as well confirmed to the effect that following elimination of the irritant, and diminishment of effusion and modification of toxic power incident to gasses, nature merely demands a free and uninterrupted outlet from the *focal point* of the *seat* of the disease to the exterior, not only during *stasis*, but throughout the entire process of cystic degeneracy, if such exist, or during the continuation of *any* discharge of *putrescent* purulent matter, or even inodorous fluids. And as the apex of a tooth leads more directly to that point, and as a natural aperture already exists and continues throughout the entire peduncular region, leading from the apices to the heart of the cysts, when such exist. And further, as Nature most invariably selects the canal of the root through which to dump her excretions, gasses included, the diameter of the apical entrance permitting, even though an artificial maxillary sinus exist, most assuredly the channel would seem the most efficient through which to administer to the disease. The *capsular* type of pericemental formation and its immediate embracement of the fang area only adds to that hypothesis. We have invariably held to this method, and any case of failure to subdue the lesion has proved, by the alternate mode of administration, *i. e.*, by way of maxilla, fully as unsuccessful. My reader so far perceives that our dependence to success bases itself upon the *volatility* of the agent employed; but this is



not all, nor the fundamental point of our argument. What we hold most prominently in view is the fact that *nature cures*, not man; and her reparative endowments and ready generosity are ever respondent, and fully effective, if all conditions adequate to other inflammatory conditions be but fully observed. To set aside an idea that through percolation, aided by gravitation and other causes, the medicant reached and acted upon the diseased tissues, (and this is possible with the inferior teeth), we mention the fact that a majority of the cases operated upon embraced those of the *superior* arch; and as that old, yet trite "aphorism" will have it that "Water runs not up hill except per force;" and again in most cases, as the dressings were merely volatilized, how, I pray, is it possible? Again, that the same did not embrace that class styled *self-curable*, conditions already enumerated fully offset, and we add thereto the fact that in our regular practice no root or tooth of possible utility has been taken from either arch, the tractionary force of which was inadmissible to finger and thumb, during the period mentioned!

In the one mouth so operated upon and now under our eye, thirteen cicatrices are traceable, eleven in the superior arch; in another, eleven; another, eight; another, five, and numerous cases of three and four in one arch, not to mention an abundance of cases of one and two. And as a period extending from two to seven years has already passed, without reverse manifestations, and that, too, in a climate favoring active progression from lesionary incipieney, we feel amply authenticated in a public announcement. That we might the better familiarize our observation of a possible variation of ossific activity in the labor of sealing the apical aperture by nature, several root canals were temporarily filled with gutta serena, and the same examined at the expiration of three, six, twelve, and again at eighteen months. Those cases of spontaneous nerve devitalization, activity of ossific energy, proved the more prominent, and entire erasement in three cases occurred in three months, in two cases in which the remnant of a nerve was removed by barb (unarsenized) and when the point of the broach freely penetrated the apical aperture, the same became entirely obliterated in four months in one, and five months in the other. Those experimented upon and arsenic placed and sealed, not only in the mouth of the canals but at the apical third, *failed* entirely, although unusual care was observed in the

subsequent treatment to induce encouragement to erasure. Those cases in which the method was pursued in devitalizing the nerve, as invariably followed by the author, (and mentioned in a paper upon "Experimentation with arsenic upon the human tooth," at the last session of the California State Dental Association,) the activity of ossific deposition proved as favorable as those unarsenized. This method consists of merely puncturing the periphery with a sharp broach point previously dipped in cobalt and creosote or carbolic acid, to expedite, and where time may be limited, then in arsenic—but only when unavoidable. Sloughing *invariably* follows in from five to ten days. If found previously inflamed, treatment with an anodyne and escharotic is observed, and painlessness of puncture encouraged by an anæsthetic.

True, frequently is it found the fact that cases require quite protracted treatment before the lesion is subdued. This, in our mind, arises through a similarity of idiosyncracies co-incident with other body abscesses, and the instance in many conditions is seized upon in reducing blood dyscrasia, and continues until parts remote are more or less relieved. In such instances dressings require frequent renewal, but medicinal administrations are entirely unnecessary, aside from that disinfectant and during the greater continuation of administration, oxygen is wholly sufficient, *i. e.*, simple, unmedicated absorbent cotton. Under conditions just named, *over treatment, i. e.*, feeding medicines in abundance (and I refer to the customary course of administration) is frequently the forerunner to *spoliation*! Experiments have plainly exhibited to us this fact, the fistulæ closing only upon cessation of interference. I know of no *specialty* as justifying in our profession as "Alveolar Abscess." To be successful one must possess or acquire an ardent love for his task, *arduous* though it be. He who marks time by the hour, or hastes to be rich, is no *true custodian* in this disease. Allow us to remark that although we failed in "cutting our eye teeth" until our tutelage under the original, and yet customary method of treating this lesion embraced a period of ten or twelve years, still we feel quite gratified by having grappled with *both sides* of the issue, and have well learned of the varied *eccentricities* habitual in "pericemental" lesions; also of the slight etiological sequences only necessary to derangement under loss of the more central support of the tooth organ; and the more *vividly* of the simple "*therapeutical*" aid only *demanded* by

*nature* in recuperation. Of one fact we are fully assured, and that is that for the past twenty-five or thirty years, the meagre success of alveolar abscess in the hands of the best experts, may be distinctly traceable to an empirical indulgence of "*arsenic*." My experiments with this article, and the microscopic analysis of a human tooth by Messrs. Bodecker, Heitzman and Abbott, fully confirm it. Arsenic not only travels throughout the body of the nerve organ proper, but far beyond, destroying the minor nerve off-shoots of the maxillaries, which assist in nourishing the root investures, (and which may be observed by careful dissection); but it does not stop at that, but also consumes all tubular investments; and what is still more fatal, (and the *sine qua non* to liquefaction of the sheath of the root,) it swallows up the "*cemental vitalized constituency*," thus instituting ossific liquefaction and osteomalacia. In summing up our success in the treating of alveolar abscess, allow us to attribute the following reasons: 1st. The immediate correction of constipation, preference favoring saline corrections rather than vegetable. 2nd. Sufficiently *enlarging* root canals to their *apices* whereby to readily and freely admit dressings, and the permanent sealing of the apical aperture without disturbance of investure contiguous to and covering foramen. 3d. *Restriction* of all *medicants* within the root canal, and under no conditions disturbing the parts beyond. 4th. Change of dressings until a condition is *reached* defining the course terminating the disease, *i. e.*, *complete cessation* of all *fluid emanations*, putrescent, purulent, and *non-putrescent*; also, rest of tooth and freedom from undue concussion throughout recuperation. 5th. *Temporary fillings* for a period justifying full or at least greatly *advanced* restitution to a *possible normality*.

It requires but a mere cursory glance throughout our Dental literature of the present day to convince one of the evident fact that but slight, if any modification, supplants the original method of treating this disease. From the earliest period of the era recognizing a possible success, when preceded by a certain course of treatment, the passage of creosote, carbolic acid, chloride of zinc, and as well even sulphuric acid, have been earnestly advocated, and most lavishly indulged, and that, too, regardless of the fact that, through loss of the *interior* support, the tooth organ is already most *prominently weakened*, and as well that the caustic properties must further deteriorate the anatomical relationship of



the remaining tissue, and the vesicular accuracy of which is the more essential to its future nourishment. No sane man will attempt denial of the destructiveness of all four of the ingredients just mentioned when in contact with exterior human tissue. If such be due to atmospherical influence, why should not the same conditions arise at the apices? for upon nerve exposure is not the atmosphere admitted to that section, or the more readily and in abundance following absence of that organ? However, too much valuable space is already solicited from our *good editor*; hence, in conclusion, we present the following points for our future reflection:

1st. That through the presence of "cauterants" within the alveolar chamber, not alone are the fungoid anatomy and its nourishing plasma arrested, but likewise that part of the root investments which may be but incipiently affected, the same retaining an increased volume of the escharotic through its detachment from the fang area, and by which not alone the dermal, *i. e.*, ossific function is deteriorated, but also that of the subdermal formation, thus encouraging cicatricial tissue and eventuating in death, and liquefaction and osteomalacia of the cemental process throughout, at least at the apical area.

2d. That cases are extremely *rare demanding* their presence in any form beyond the apices, fistulæ or otherwise, and they are permissible only where necrosis is positively affirmed.

3d. Owing to obscurity of the parts involved, no defined limits of diseased boundary is possible, nor can the maximum or minimum limits of "cystic" formation be accurately determined.

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## A RARE CASE OF EXOSTOSIS.

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BY DR. L. M. MATHEWS, FORT SCOTT, KANSAS.

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ON the 21st of March, 1883, Mrs. B., age 56, called at my office for the purpose of having the remaining eight superior and one inferior tooth extracted, preparatory to having artificial sets inserted, they being badly decayed. The first tooth I extracted was the right superior, lateral incisor, which required a great deal



of force to remove it. I found a square shoulder formed, about half way from the neck to the apex, the enlargement extending to the apex, making the exostosed portion fully one half larger in diameter, than the part above it. I then removed the first bicuspid, on the same side. I found the same condition of osseous formation. I then removed the canines, and found them in the same condition. I then removed the first and second molars, on either side. The roots were nearly obliterated by the osseous deposit. The lady informed me that all her other teeth had been in the same condition. I have, at different times, in a practice of ten years, removed as many as two teeth in the same mouth that were exostosed. I do not remember reading of a case where the entire denture was exostosed. This may not be a rare case, but I thought it might be well to present it, if not for the information of my confreres, for their opinions. The lady said she had never suffered very much with her teeth, but had been a great sufferer for several years, by neuralgic pains in her eyes and forehead, with quite a weakening of the optic nerve. These pains were not periodical, as is usual, but constant.

Is this neuralgia, and the partial loss of sight, a sequence of the exostosed condition of the teeth? I shall watch the case with interest, and expect an improvement in the eyesight, and the disappearance of the pains in the forehead.

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#### IN MEMORY OF DR. W. H. GODDARD.

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At a meeting of the dentists of the City of Louisville, held at the dental depot of Dr. Frazee, on Monday, March 5, 1883, Dr. W. G. Redman was called to the chair, and Dr. C. E. Dunn, was made Secretary.

The Chairman announced that the object of the meeting was, to take some action in memory of Dr. W. H. Goddard, who died at his home in this city, on Sunday, March 4, at 1:45 A. M.

On motion, Drs. C. E. Dunn, F. Peabody, and B. O. Doyle, were appointed a committee to draft resolutions.

The committee on resolutions submitted their report, which was, on motion, received and adopted, as follows:—

God having called from among us, our friend and brother, Dr. W. H. Goddard, while we, with humble reverence, submit to the will of Him who doth all things well, it is fitting that we assemble together, to do honor to one, who had for so many years, honored our profession.

Dr. Goddard entered the dental profession in its infancy, and labored earnestly and faithfully to advance and bring it to that high standard, of which he felt it was worthy and to which it was justly entitled; and to the day of his death, he held its interests near to his heart, and constantly in mind. He opened an office in our city, about the year 1840, and, with the exception of a short time that he was engaged in mercantile pursuits, was in active practice through life.

A few years since, the weight of years caused him to retire, but not to lose his love and interest in the profession, with which he had been so long connected. A few weeks before his death, one of your committee heard him express his fears, that he "Would not get to Niagara, to the meeting of the American Dental Association," (showing how continually it was in his thoughts,) in which Association he had for fifteen successive years been elected its Treasurer, performing the duties of that trying position, so faithfully, that he was familiarly called, "The Watch Dog of the Treasury."

In August last, at its meeting in Cincinnati, he was elected President, holding that position at his death, hence, we can truly say of him, "He died with his harness on." In his death, the members of our profession, have lost a bright example, a good counsellor, and true friend, to whom we could always apply freely for advice and help; and while it might sometimes be given in his short, blunt way, we well knew it was honest, and could be depended on. In token of our love and respect for him, we inscribe these few lines to his memory, and request that they be published in the dental journals, and that a copy be furnished the family and that we attend the funeral in a body.

CHAS. E. DUNN,	} Committee.
F. PEABODY,	
B. OSCAR DOYLE,	

ATTEST: CHAS. E. DUNN,  
*Secretary.*

W. G. REDMAN,  
*Chairman.*

## Societies.

"Wherewith one may edify another."

### DENTAL DEPARTMENT OF THE UNIVERSITY OF MARYLAND.

THE first annual commencement of the Dental Department of the University of Maryland, took place at the Academy of Music, Baltimore, on Thursday, March 15, 1883.

Reading of the mandamus, and announcement of graduates, by the Dean, Ferdinand J. S. Gorgas, M. D., D. D. S.

The address was delivered by Hon. John V. L. Findlay.

The number of matriculates for the session was sixty-six.

The degree of D. D. S., was conferred on the following gentlemen, thirty-four in number, by Hon. S. Teackle Wallis, L. L. D., Provost of the University.

NAME.	RES.	NAME.	RES.
J. Hardin Baldwin,	Kentucky.	Wattie B. McGirt,	S. Carolina.
F. Austin Banks,	Michigan.	J. Edwin Miller,	Minnesota.
Barton B. Breedon,	S. Carolina.	Eli H. Neiman,	Pennsylvania.
Paul Campbell,	New York.	A. Lee Pennel,	Maryland.
Frank G. Conklin,	New York.	Walter W. Rowe,	Pennsylvania.
Joseph W. Curtis,	New Jersey.	Hippolyte C. Salles,	Louisiana.
Erastus S. Dashiell,	Maryland.	Charles N. Sanchez,	Cuba.
Newton W. Denton,	Virginia.	C. Julian Smith,	S. Carolina.
R. Delamer Dodson,	Pennsylvania.	Walter O. Smith,	Virginia.
John F. Garrett,	N. Carolina.	Myron W. Snyder,	New York.
Godfrey J. Grempler,	Maryland.	Walter Stuart,	Kentucky.
George W. Hotaling,	New York.	Newton Addison League,	S. Carolina.
R. Arthur Hungerford,	Maryland.	Norman B. Tipton,	Louisiana.
Atwell T. Garrett,	Virginia.	J. Everett Toombs,	Massachusetts.
Geo. Wilfred LeDuke,	Massachusetts.	Geo. Andreas Volck,	Maryland.
Charles T. Lindsey,	Virginia.	Fred Allen Weaver,	Massachusetts.
B. Frank Maphis,	Virginia.	Aug. F. L. Wietfeldt,	Germany.

No. of matriculates, sixty-six, all of whom were dental students, and *not* matriculates of the Medical Department. No. of graduates, thirty-four, all of whom, without a single exception, attended the entire course.

The University Prize, a gold medal, was awarded to John F. Garrett, of North Carolina, for the highest standing at the final examinations; J. Edwin Miller, of Minnesota, receiving honorable mention. The first S. S. White Prize, a dental engine, was awarded to F. Austin Banks, of Mich.; Frank G. Conklin, of Ind., and J. Everett Toombs, of Mass., receiving honorable mention. The Snowden & Cowman Prize, a set of forceps, was awarded to G. Andreas Volck, of Md. The second S. S. White Prize, a set of Varney's Instruments, was awarded to Walter Stuart, of Ky. The Wilkerson Prize was awarded to Myron W. Snyder, of N. Y.; W. O. Smith, of Va., receiving honorable mention. The Genese Prize was awarded to Eli H. Neiman, of Penn. The Dental Register Prize was awarded to Frank G. Conklin, of Ind. The Southern Dental Journal Prize was awarded to Walter W. Rowe, of Penn.

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### THE MADRIVER VALLEY DENTAL SOCIETY

Will meet in the parlors of the Philips House, Dayton, Tuesday May 22d, at 10 A. M., and continue through afternoon and evening. Subjects for discussion: 1. Prosthetic Dentistry, with special reference to Restoration of Features. 2. The Restoration of Crowns upon Natural Roots. 3. Treatment of Irregularities; and the Proper Antagonisms of Natural and Artificial Teeth. 4. What should be done further to protect the public from the increasing empiricism practiced in our larger cities?

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### AMERICAN MEDICAL ASSOCIATION.

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#### SECTION ON DENTAL AND ORAL SURGERY.

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THE thirty-fourth annual session will be held in Cleveland, Ohio, commencing Tuesday, June 5, 1883, at 11 A. M., and continuing four days.

"The delegates shall receive their appointments from permanently organized State Medical Societies and such County and District Medical Societies as are recognized *by representation in their respective State Societies* and from the Medical Department of the Army and Navy and the Marine Hospital Service of the United States."



All medical men of the regular school practicing the speciality of Dental Surgery are most cordially invited to procure credentials from their local Medical Societies, and join us at Cleveland. Railroads furnish reduced rates to all members wishing to attend.

A member wishing to read a paper before any section should forward the paper or its title and length (not to exceed twenty minutes in reading) to the Chairman of the Committee of Arrangements at least one month before the meeting. (By-Law.)

TRUMAN W. BROPHY,

Secretary Section on Dental and Oral Surgery Am. Med. As.

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### UNIVERSITY OF MICHIGAN.

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THE calendar of the University of Michigan for '82-83 has been issued about a week later than usual this year, owing probably to delays consequent upon the change in the official department. It gives a fair showing for the University, even though the number of students enrolled this year is rather less than last. There are eighty three members of the various faculties, including president, professors, librarian, lecturers, tutors and assistants. In the School of Literature, Science and Arts, there is a faculty of forty-three; in the department of Medicine and Surgery, twenty-four; in the department of Law, six; in the School of Pharmacy, eleven; in the Homeopathic Medical School, seven, and in the College of Dental Surgery, seven. The number of students in the department of Literature and Art is 524, twenty-five of whom are resident graduates, and 410 are candidates for a degree, while the remaining eighty-nine pursue selected studies only. There are 369 students in the Medical department, 120 in the senior class, and two resident graduates. In the Department of Law there are 333. There are eighty-seven students in the School of Pharmacy, sixty-nine in the College of Dental Surgery, and fifty-eight in the Homeopathic Medical Department, making the whole number of students 1,440. Nearly half these, 671, are from Michigan; 129 are from Illinois; 126 from Ohio; ninety from Indiana; seventy-seven from New York; sixty-eight from Pennsylvania; thirty-eight from Iowa; thirty-two from Wisconsin; twenty-six from Minnesota; twenty-two from Missouri; nineteen from Massachusetts; twelve from Kansas. Every State in the Union has its repre-

sentative, or representatives in fact. Twenty-two are from Ontario, two from England, one each from Scotland, Ireland, New Zealand, New Brunswick, Nova Scotia, Roumania and the Sandwich Islands. Of the resident graduates in the Literary Department about twenty-five per cent. are ladies, and of those who are candidates for a degree, about eighteen per cent. There are thirty-eight ladies pursuing a medical course. In the Law Department there are three ladies, two in the Dental Department, and twelve in the Homeopathic College.

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### CHICAGO DENTAL SOCIETY.

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At the annual meeting of the Chicago Dental Society, held April 3d, the following officers were elected for the ensuing year: President, Chas. P. Pruyne; First Vice-President, C. F. Matteson, D. D. S.; Second Vice-President, J. W. Wassall, D. D. S.; Recording Secretary R. H. Kimball, D. D. S.; Corresponding Secretary, A. W. Harlan, D. D. S.; Treasurer, E. D. Swain, D. D. S.; Librarian, Jos. G. Reid, D. D. S.; Board of Directors, George H. Cushing, D. D. S., J. N. Crouse, D. D. S., E. Noyes, D. D. S.

Respectfully,

A. W. HARLAN,  
Corresponding Secretary.

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### THE NEBRASKA STATE DENTAL SOCIETY.

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The seventh annual meeting of the Nebraska State Dental Society, will be held at Lincoln, Tuesday, May 22, 1883, and will remain in session two days. W. F. ROSEMAN, Sec'y, Fremont.

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### UNIVERSITY OF MICHIGAN.

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#### COLLEGE OF DENTAL SURGERY.

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The eighth annual commencement of this department of the University, was held on Wednesday, March 28th, at 2 o'clock P. M., in University Hall. A very instructing address was delivered by Dr. G. R. Thomas, of Detroit, Mich., in the presence of a large audience.

The degree of Doctor of Dental Surgery, was conferred upon the following persons :

Frederick Hornby Berry, Ann Arbor; Charles Blair Blackmarr, Jackson; Wilbur Buzzell, Flint; Maximilian E. Chapalay, Bucharest, Roumania; Bernard Henry Conlin, Columbus, Wis.; William Walter Curtis, Chicago, Ill.; Walter Irwin Dadmun, Milwaukee, Wis.; Marshall Bidwell Dennis, New Market, Ont.; William Otis De Puy, Ann Arbor; George Lewis Fox, Adams Centre, N. Y.; John William Gale, Lodi, N. Y.; Charles A. Gallagher, South Bend, Ind.; Arthur St. Clair Graham, Colfax, O.; Will Harmon Hall, Martin's Ferry, O.; Stanley Read Holden, Watkins, N. Y.; Frank Alexander McAuley, Muskegon; Charles Cornelius Newcastle, Grand Rapids; William Franklin Overholser, Logansport, Ind.; Byron Smith Palmer, Coldwater; Lyman Trumbull Phillips, Nashville, Ill.; Perley Andrews Powers, Hollis, N. H.; Ozora Pierson Sutherland, Monroe, Wis.; John Brinkerhoof Van Fossen, Ypsilanti.

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## PROCEEDINGS OF THE THIRTY--NINTH ANNUAL MEETING OF THE MISSISSIPPI VALLEY AS- SOCIATION OF DENTAL SURGEONS.

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REPORTED BY E. G. BETTY, D. D. S.

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THE Association met in annual session in the lecture room of the Dental College at 10 o'clock A. M., Wednesday, March 7, 1883. The members were promptly called to order by President Clyde, and prayer was offered by Dr. Jerry Robinson, of Jackson, Michigan. The minutes of last year's meeting were read by the Secretary, Dr. Hoff, and no objections being made, they stood approved as read. On motion of Dr. Hunter, the time of meeting for the several sessions was fixed at 9 to 12; 2 to 5:30; and 7:30 to adjournment.

Dr. H. A. Smith, Chairman of the Executive Committee, reported the following programme of subjects for general discussion :

1. Nervous and Muscular Affections dependent on Dental Irritation.

2. Etiology and Pathology of Dental Caries: Treatment by filling.

3. Periodontitis and Alveolar Abscess: Pathology and treatment,

4. Prosthetic Dentistry: Restoration of features and expression how best accomplished.

5. Fitting Artificial Crowns to Roots of Natural Teeth: New and Old Methods.

6. Reports of cases in practice.

The report was, on motion, adopted.

A motion was carried to set apart the hour of 11 o'clock A. M., March 8th, to enable Dr. W. S. Howe, of Philadelphia, to exhibit some new and interesting methods in Mechanical Dentistry, and the mounting of artificial crowns upon roots.

The Committee on Publication, through Dr. J. Taft, reported that the papers and proceedings of last year's meeting were duly published in the journals, the *Register* making a complete report of the discussions.

A recess of five minutes was had to enable the Treasurer to collect dues from the members.

Dr. J. Taft, Chairman of the Committee to draft resolutions, expressing the sense of the Association upon the death of Prof. Jas. Taylor, made report:

### \* In Memoriam.

Since the last meeting of this body one of its prominent members—Dr. James Taylor of Cincinnati—has passed away. This event produced more than an ordinary impression, not only upon the community in which he lived, but especially upon the profession of which he was an honored member. In a very marked manner is his loss felt by this Society, in the organization of which he was one of the leaders.

He was a pioneer in his profession, for the West and South; indeed, his influence was felt throughout this entire country. In the early part of his career, he heartily and earnestly engaged in various enterprises for the development and progress of his chosen profession, employing his time, energy and money for the purpose.

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\* This was written at the close of the meeting in 1882, but was not read at that time.



It is not possible, however, to mention all that he did. Justice, however, requires that these things should not be wholly passed by. He early took a stand for high professional culture and attainments, and not only in theory, but he early put into practice, the principle he avowed. He was one of the earliest editors of dental periodical literature. He established, and for many years edited, the *Dental Register*, the oldest dental journal, with one exception, in the world.

He was largely instrumental in the organization of this Society. He was mainly instrumental in the establishment of the Ohio College of Dental Surgery, and was an officer or teacher from its organization till his death.

He took an interest in everything pertaining to public welfare. He was honored and beloved by all who knew him. In some respects his place will never be filled. The most befitting tribute we can pay to his memory, is to imitate to our best ability the sterling qualities that animated and guided him in all his course of life.

Your Committee suggest that this expression of regard and appreciation be engrossed upon a memorial page of the proceedings of this Society; and also that a copy in proper form be sent to her who was the greatest sufferer in this bereavement.

J. TAFT,

JAS. LESLIE.

DR. G. W. KEELY said that thirty-five years ago, when he began the practice of dentistry, Dr. Taylor was the first man in the profession to give him any encouragement. He had often met Dr. Taylor at the Society, he did more than any one else to establish this Association upon a firm footing; he worked hard and earnestly to make it a success, and with what result we all know.

DR. J. TAFT.—The report of the Committee could have been much longer. Some thirty-five years ago Dr. Taylor assisted me in my profession, and I have no doubt but that his advice has influenced my subsequent career by broadening my views and stimulating me in the right direction. Dr. Taylor always helped young men and never failed to do what he could to put them in the right way of becoming successful and useful in their profession.

DR. BERRY.—I heartily endorse all that Prof. Taft has said

about Dr. Taylor. I remember that many years ago, Dr. Taylor introduced Dr. Taft as a member of this Association, and that he enjoyed a peculiar pleasure in so doing.

DR. H. A. SMITH.—When I first had the pleasure of meeting Dr. Taylor, it was upon the occasion of my entering the college. I called at Dr. Taylor's office on the morning of that day, and was then impressed with the metropolitan air a busy office requires. My whole professional career has been benefited by the advice and counsel Dr. Taylor gave me. He was a man of singularly cool, clear judgment, and measured a man correctly upon first seeing him.

DR. OSMOND.—I heartily agree with all that has been said by the gentlemen preceding me. I have known Dr. Taylor for many years, often visiting his office and receiving many valuable suggestions about dental matters. Many things that we now call new can be referred back as originating with Dr. Taylor, such as treatment of dental diseases and methods of filling; just as, when we think we have come upon a new thought or saying, we will, upon hunting it up, find it in Shakespeare.

DR. C. R. TAFT.—When I was a student in 1850-51, I had an aching tooth that needed filling. Upon excavating it, Dr. Taylor came upon a live nerve. He went out into the laboratory and made a small concave cap of gold which he placed over the pulp, and then filled the tooth with gold. The tooth and its filling are still doing good service, and though I am not certain, I think it is yet alive. Can any one do better than that to-day? I apprehend that we are not far in advance to-day of what Dr. Taylor was many years ago.

DR. J. TAFT.—It is impossible for one man to make a complete biography of Dr. Taylor, and I cordially invite all the older members of the profession to assist me in the matter by giving me such items and reminiscences as they may possess. I do this because we all want a good biography of Dr. Taylor, and such an one I intend to publish in the *Register*. I have a biography prepared and have delayed it in order to procure a steel plate, which can probably be obtained, when the engraved portrait will appear with the biography.

The report was adopted by the Association on a rising vote.

On motion, the Committee on Constitution and By-Laws was granted further time.

The debates on the programme being next in order, the first subject, "Nervous and Muscular Affections Dependent on Dental Irritation," was announced.

DR. BERRY.—I call upon Dr. Osmond to make the opening speech.

DR. OSMOND.—Nix come arou.

DR. KEMPTON.—This subject has been agitated in the journals for several years past. In investigating the subject we must be careful to distinguish between an effect and a coincidence. Persons may suffer from nervous troubles that have no connection with the teeth.

There are many instances in which other affections are traceable to the teeth, as for instance, pain in the ears. A young man once presented himself with severe pain in the ear, and but little in the tooth, the latter was extracted while a marked exacerbation of the pain in the ear almost immediately followed, finally disappearing. Dr. Sexton, an ophthalmologist and aurist of New York, mentions many cases where the ears have been treated without success, until the dental lesions had been removed. He also cites cases of diseases of the eyes due to dental lesions. I have seen one or two cases of marked congestion of the conjunctiva connected with diseased teeth. Dr. Sexton said that of 6,000 cases he had treated about fifty per cent. were caused by dental lesions.

DR. C. R. TAFT here introduced Dr. L. Buffett, of Cleveland, to whom was accorded the privilege of the floor: the same courtesy being also extended to Dr. J. A. Robinson, of Jackson, Michigan.

DR. L. BUFFETT thanked the Association, and remarked that he was hardly prepared to discuss the subject under consideration, without having had time to think it over a little. The muscular and nervous systems are so intimately connected, that the cause of muscular troubles must be sought for in the nervous. Upon the nerves themselves we may have tumors. Again, the nerves may be either atrophied or hypertrophied.

Hypertrophy of the nervous tissues causes an exalted degree of pain and sensibility in the part to which the nerve is distributed. Atrophy sometimes produces pain, but most usually, a cessation of pain and sensibility in the periphery, and sometimes paralysis of the muscular tissue.

The subject under consideration is the most difficult one to

manage in the practice of our profession. In the majority of cases hyper-sensitive condition of nerve is the cause of many troubles and pains we have from the teeth. There is never a case of nerve irritation or neuralgia in which the nerve suffers from a lack of tonicity at the point of irritation. Special paralysis and muscular atrophy upon investigation will be found to be due to the irritation of some part of the nervous system, and reflected to the periphery. Owing to the great ramification of the tri-facial nerve, we may have a more exaggerated manifestation of the pain at any one point.

DR. KEMPTON.—Dr. Brown Sequard delivered two lectures in Cincinnati some time ago, and mentioned several cases, one of which is to the point, viz.: A boy was seized with an epileptic convulsion every time he put his foot on the floor when getting out of bed, and though he repeatedly tried it, the same result followed. Upon examination of the foot a splinter of wood was found imbedded in the integument; it was cut away and the convulsions disappeared. The distinguished lecturer said that very slight and apparently insignificant causes were sometimes attended with serious results. In view of this it is well to have the teeth looked after when there is nerve trouble.

DR. J. TAFT.—It would be well to have some sort of a classification upon which to proceed in the discussion of this subject. For instance, the effect of reflex action upon the nerves. Every muscle has its nerve that controls and modifies its action. The sensory nerves carry the sensation from the periphery to the muscle, in that way referring the pain to the muscle.

The hour of adjournment having arrived, the discussion was postponed.

DR. J. B. KIDD, of Lexington, Ky., was elected to membership by the Secretary's ballot on motion of Dr. Hunter.

#### AFTERNOON SESSION.

The Association was called to order by President Clyde, the minutes of the morning session being read and approved. The discussion of the first subject was resumed as follows:—

DR. J. A. ROBINSON.—I once saw a case of paralysis of the arm caused by a dental lesion. The patient was a lady *at* thirty-eight years, whom I first met in a physician's office. Her left arm had been paralyzed for three months. Upon examining her mouth I found the second and third molars of the left side both badly



decayed. These I extracted, and the patient rapidly recovered. Another case was one of neuralgia. The gentleman experienced pain every time he stroked his beard, which was long and full. The cause seemed to be due to an upper cuspid tooth that had been filled. I prescribed a topical application of chloroform to the face, which gave him relief for a day or two. The pain returned, so I removed the filling and destroyed the remains of the nerve. This having no permanent effect, I gave him heroic doses of quinine, from which he obtained relief for two or three weeks, when the pain again returned. I then put him on Fowler's Solution, with but little benefit. I then went back to the chloroform, and, by persisting in its application, the trouble finally disappeared.

DR. G. W. SMITH has had no such cases in practice. It is well to look at the different kinds of nerves there are, and observe the different effects they have. A sensory nerve produces its effect on the sensorium; the motor nerve produces its effect on the muscle by reflex action. When a nerve trunk is cut, an irritant on the trunk end produces sensation, while the same on the periphery produces no effect; this, of course, is true of sensory nerves. On the motor nerve when cut, an irritant will cause contraction of the muscles to which the nerve is distributed.

DR. H. A. SMITH.—A rather novel case occurred in the College Clinic during the past winter. The patient was a healthy young man. The superior maxilla was attacked by caries. Three of the incisors were found to have dead pulps, and were hyper-sensitive. The left lateral was drilled into, and all the pain instantly disappeared. The hyper-sensitiveness must have been caused by the irritation of the dead pulp, and the pain being reflected to the point usually occupied by the pulp. A sinus was made for the purpose of treatment, and forty-eight hours after the sub-maxillary gland was largely swelled. Any application of treatment was shortly followed by renewed swelling of the gland. This I mention to show how slight a degree of irritation will sometimes induce a serious inflammation. Another case was one of facial paralysis. I found, upon examination, that it was due to an abscessed lower tooth that had been filled with amalgam. The filling was removed, and the abscess yielding to treatment, the case gradually recovered.

DR. KEMPTON.—The importance of this condition varies with

the kind of case. When the dental lesion is insignificant and the local marked, the cause may be overlooked, and the disease treated without favorable results to the prejudice of the patient. It is important, then, that the teeth should be examined in all obscure cases. In other instances the dental lesion is so marked that attention is immediately drawn to the teeth. In one case of facial neuralgia the teeth were all more or less carious, and some twenty odd were extracted. The neuralgia disappeared. In this case there had been no pain in the teeth, and in such instances the cause is apt to be overlooked.

DR. SAGE saw a case of St. Vitus' dance in a boy aged twelve years. The physician's treatment was palliative, though he advised the extraction of a diseased lower molar. As the patient was in bed, he was chloroformed, and examination showed a dead molar with incipient abscess. This was treated, and the patient recovered.

DR. KEMPTON.—A German journal published an account of a case in which the toothache was violent, though the affected tooth was sound. Upon cutting into it, calcific deposits were found in the pulp chamber. The nerve was killed, and canal filled. This had to be done for a number of teeth, though all had to be extracted before final relief came.

DR. OSMOND cited a case of a boy aged fourteen years, who had suffered severely with neuralgia arising from a bicuspid tooth. Treatment benefited the patient somewhat, though permanent relief could only be had from extraction. On splitting open the tooth, a nodule was found in the pulp, which I still have in alcohol.

DR. G. W. SMITH cited a case in which he had discovered a number of nodules in the pulps of teeth in a patient *æt* twenty-five. Dr. Smith was at this time elected a member of the Association by the Secretary's ballot.

PROF. J. TAFT.—I am scarcely prepared to speak on this subject at this moment, as it is a very broad one, and one that requires thought and careful consideration. It is one that needs for its treatment a long and intelligent experience upon which to base argument. If there is pressure upon a nerve there will be one of several manifestations: paralysis, neuralgia or inflammation. The slightest cutting or wounding of the finger is oftentimes the cause of so serious a consequence as tetanus. The

administration of violent poisons—those acting very suddenly—will produce a perfect interruption of nerve function, so marked as to destroy it altogether. *How* it is done we do not know. In first dentition, disturbances are produced by an irritation reflected to the pneumogastric nerve. In retarded first dentition, convulsions arise in many instances, being a contraction of the muscles, sudden and violent. I do not think that the disturbances accompanying first dentition are caused by a pressure of the erupting teeth upon the over-lying tissues.\* It is more likely due to a lack of nutrition to the parts of the nervous system involved.

DR. BUFFETT.—Is there not pressure upon some nerve in some part of the nervous system?

DR. J. TAFT.—The pressure may exist, and possibly does, but we can not detect it as it is so slight. In malarious regions of the country, neuralgias are prolific, but we cannot say that they are caused by pressure upon some nerve.

DR. BUFFETT.—I believe we always have pressure where there is pain. Even if we can not find it, it is reasonable to suppose that it does exist, and I repeat, pressure always exists where there is pain.

DR. BETTY.—If the theory that pressure produces the pain is correct, why is nerve-stretching resorted to?

DR. BUFFETT.—To relieve the pressure.

DR. BETTY.—Is not excision or a removal of a part of the nerve effectual?

DR. BUFFETT.—Extension is only resorted to after excision.

DR. HOWE.—In every motion we make, matter goes through a process of destruction or metamorphosis, and so long as the "street cleaning department" † carries it off, all right; but should there be more effete matter formed than can be carried off, pain will result.

PROF. J. TAFT.—If the nourishment of a nerve is reduced in amount, the nerve will suffer; I don't say, pain, but it suffers nevertheless.

DR. BUFFETT.—You may have atrophy of a nerve, but there will also be found pressure at some other point along the course of the nerve.

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\* No, but by pressure beneath—on the dental nerve, or pulp.—ED. JOURNAL

† Dr. Howe being an old Cincinnati; and the subject of street-cleaning being much agitated of late, he may be pardoned the use of this expression.—Rep.

DR. TAFT.—That is an open question, and I think it conveys a false impression to say that all pain in a nerve is due to pressure.

DR. SAGE.—The swelling of glands is due to a sympathetic action of the nerves, as for instance, the swelling of the glands in the groin in gonorrhœa. In specific diseases, the glands far remote from the local trouble exhibit the swelling and inflammation.

DR. CLYDE mentioned a case of "milk crust," and wanted to know if that was a result of dental lesion.

DR. OSMOND.—I, too, have seen eruptions upon the scalp and skin of infants, and have relieved the whole thing by simply scarifying the gums.

DR. J. TAFT.—We must not infer that all scalp diseases owe their origin to some dental lesion, though there are undoubtedly cases whose cause may be found in the teeth and dentition.

DR. WRIGHT.—In South Germany and Switzerland the people seem to be superstitious on the subject of scabby heads. It is a common thing for the parents to foster the scabby head by covering it with a cap of some kind, never disturbing it, and leaving the scabs to thrive underneath.

DR. KEMPTON.—This scabby head, or "milk-crust," is most common among the Germans, and is probably due to the kind of food that is consumed, an inferior quality of which, together with a great deal of beer, to say nothing of a dearth of soap, being enough to produce almost anything.

DR. BUFFETT.—The teeth have nothing whatever to do with eruptions upon the scalp, further than that a disturbance in any part of the system favors this other process in the scalp by weakening the tone of the system. In my opinion, these infantile scalp diseases are the result of the severe washings the new-born infant is subject to. I regard it as very fool-hardy, and I direct that they shall be thoroughly annointed and then merely wiped off.

DR. KEMPTON.—During my experience as a medical practitioner, I have always instructed the nurse to wash the child thoroughly. The oil or lard used in annointing forms a kind of emulsion with the sebaceous matter on the surface, and is easily removed.

DR. J. TAFT mentioned five cases of nerve-stretching, four of



which were successful, the fifth being a failure. I was not aware, until Dr. Buffett told us, "that extension of the nerve was only resorted to *after* exsection."

Upon motion the subject was passed; the second being announced for discussion. Dr. G. W. Smith read part of a paper bearing upon the subject. The point of his paper was a description of a paste for capping exposed pulps, and is as follows:

R, Ol Anisi 3 I.

Creosote ( wood ) 3 II.

These are mixed together in a bottle, and are kept tightly corked. The powder is composed of Zinc oxid and Sodæ Biborate, each an ounce, well mixed together. When the capping is needed, the liquid and powder are made into a paste, which is applied right over the pulp, and the filling put over that.

DR. J. A. ROBINSON.—I have been in the habit of making fillings in sections as it were. After the capping has set, I trim it away from the cervical border, and put in about one-third of the permanent filing at that point. I then remove the surplus from the upper portion of the capping, and introduce the remainder of the filling.

The philosophy of the method is to prevent the capping from changing its original position, while under the strain incident upon the introduction of the filling. When the oxy-chloride is placed over the paste, or covering, directly in contact with the pulp, the attraction of the chloride will lift the application away, leaving a space under the capping between it and the pulp. This I can readily prove by making a capping on a piece of glass from the under side of which, the space I speak of, can very readily be seen.

DR. OSMOND.—In capping a pulp with gutta-percha dissolved in chlorform, the evaporation of the later causes the gutta-percha to draw away and leave a space between it and the pulp.

DR. SMITH, ( G. W. ) said that all vegetable oils are easily absorbed, and that his method saved the teeth. No matter *how* it was done, the fact spoke for itself.

DR. KEMPTON.—As part of the subject is "treatment by filling," I would like to say that the oxy-phosphate of zinc has a large field before it. I have in some cases seen it withstand the wear of two years' time. Adjourned.

(To be continued.)

## Editor's Specials.

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"Write the Vision and make it plain."

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### "OUR GLORIOUS PROFESSION."

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WHEN a young physician, our office adjoined the shop of a young tailor, and there was a double-door opening between the two, made for the convenience of a former occupant who had used both rooms, but sometimes opened by us for better ventilation. Though the rooms were alike his was a *shop*, while mine was an *office*; and certainly there was some glory in that. A severe epidemic was keeping us very busy, while the tailor was annoyed by sickness in his own family, and by the illness of one of his employees. Sitting cross-legged on his bench, he began scolding at fate, saying, "You are not working as hard as I am, and you make four or five dollars to my one; and it's not fair—there's nothing fair about it." We didn't dispute with him, and he kept on, for a considerable time, in the same strain; but after a deliberate silence, he broke out, "I guess it's fair after all. Catch me being penny-dog for everybody! I'm making a wedding coat, and if I had not wanted to make it, I could have said, 'go about your business! an old blouse is good enough for you to wear at your marriage to that girl,' and none but he would have cared. But all that is necessary to force you out is to whistle, point the finger, and say, 'Seek him, Penny,' and you have to go or have a mob at your heels. It's about fair."

We had not thought of the above described scene for more than a score of years; but it was recalled by an editorial article in the *Columbus Medical Journal*, entitled, "A Cad of a Doctor," giving also a definition thus: "Cad, a vulgar, low-bred, pretentious person."—WEBSTER.

This article takes a discouraging and discouraged view of the medical profession throughout, at least in reference to its social status. It says, "A few generations ago, medicine was regarded as one of the learned professions, and to belong to it was an honor. At present, however, it is very safe to say that the young doctor starts out with scarcely greater social prestige than the

young artisan, clerk or bookkeeper, and even less than the manufacturer or merchant, while his lower position, with reference to Theology and Law, goes without saying." Further on the article states, "But it remained for the last few months to put the crown of deepest humiliation and shame upon our profession. Garfield was shot, and at once there was a struggle for the honor of attending him, in which he who was least qualified for the duty—and as it has since appeared, least desired by the patient—came off victorious. Then there was the long series of criminations and recriminations in the newspapers, over the diagnosis, prognosis and treatment. Then the post mortem, which brought confusion to the profession, as it revealed the gross error in diagnosis. Then the quarrel over the post mortem; what could the public think of a 'science' which was unable to demonstrate whether a blood vessel had been injured by a bullet, eroded by ulceration, softened by pyemia, or burst by the embalmer's syringe?"

This is really more severe than "Gail Hamilton's" famous sarcasm of the fatal bullet being "found in the wash basin," which "shocked the proprieties," as if she had blasphemed the god of surgery; and this comes from the inside.

The article states further, "We turn the page and read the chapter of Guiteau, and find the usual quarrel of the 'experts' over the question of his sanity; we find him dead, and another quarrel over the autopsy; we find his brain submitted to 'experts,' and another bitter quarrel resulting therefrom." And again, we find the bills "cut down to one-fourth the amount asked for, and our cup of humiliation is full." But still the tincture of humiliation was not exhausted, the cup ran over when "a mere female *nurse*, nurse Edson, was awarded pay about equal to that bestowed on an expert." But aside from the fact that *mere* females make the best nurses, in what direction did our dying President receive more benefit from the experts than from the *mere* female?

But lower than all, the article regards the action of the New York Society as the deepest depth ever reached in the mines of degradation: and perhaps he is right.

"Now, if these things be done in the green tree, what shall be done in the dry?" Or, in other words, if a physician, editing a medical journal of good report, so estimates his own profession, what shall be the estimate of it by the laity, and by members of

other professions? Yet this is the profession of which dental surgery is a specialty, unless, as some claim, dentistry is a profession *per se*. We are highly interested in the matter, if the former view be the true one. We are either on the same boat, or in the yawl tied to its stern; unless, like the O'Malleys during Noah's flood, we have a boat of our own.

It is just possible that the professions assume dignities not naturally belonging to them. When but a young physician, one still younger felt aggrieved—perhaps insulted—because, at a social gathering of young folks, he had been treated with no more deference than the young farmers and mechanics. He was complaining to an experienced physician, who was trying to assure him that the young ladies intended no disrespect, and asked if they had not treated him quite as kindly as they had the others. Certainly, said he, but we doctors follow a more dignified business than they, and should be received in company accordingly. Oh, don't talk about our dignified business, while nearly all we do is ride about and inquire into the character and quality of our neighbors' excrements, was the reply of the elder; and as Asiatic cholera was epidemic at the time, the remark seemed all the more appropriate.

After all that can be said, it is not the calling that honors the man but the man the calling—

“Act well your part, there all the honor lies.”

The writer was driven from the farm with the hope and expectation that he would lead a professional life; and though he had “tied up” the sore toes and bandaged the cut fingers of his school-mates, from his entrance into school, no one thought of his becoming a physician. And truly the physician's is a *dirty* life, and one exposed to special dangers, of the most disgusting character. And were it not for the power and opportunities it affords him to benefit his race, the physician's would be the last choice of callings.

Is it worth while, in view of all these things, for dentists to be ambitious to be recognized as physicians? Most certainly not. But the dentist cannot practice his craft without acting on and for living tissues, hence he must understand the laws of life, or be found derelict. In the prosthetic department of his profession he replaces lost organs, or finds substitutes for them, hence he



must understand the natural organs. As he deals with the suffering, and even inflicts pain, he must abound in human sympathy, and know how to accomplish the desired end with the least pain possible, and hence he must have a knowledge of psychology and physiology. And so we might go on, showing all the time that the dentist must have wide, as well as accurate attainments in medical science. But this would be to demonstrate that dentistry is a specialty in medical science, leaving the questions as to whether the dentist is a medical man, or how he is to be educated, still unanswered.

Many dentists remind us of a "bound-boy" after having reached his majority. He tries to identify himself by searching for his long lost blood relations; they seem bewildered as to their rank in professional relationships.

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### AN EXPERIMENT IN PHOTOGRAPHY.

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DURING the Autumn of 1861 we felt like trying our hands at photography. We wished to make photographs on paper directly, without the intervention of a negative, and not only this, but to thus make greatly enlarged pictures of microscopic objects. Being totally unfamiliar with the practical process, we invited to our assistance a friend of our earlier years, Mr. Samuel Hypes, a practical photographer, and a common-sense man. Looking at the strong light concentrated to a point in the focus of the microscope, at first thought we inferred that the paper should be less sensitive than that prepared for ordinary use; but an almost instant sober second thought reminded us that, as the light from the small object was to be diffused over very large spaces comparatively, the paper could scarcely, if at all, be made too sensitive, and we acted on this. The result was a number of very beautiful photographs of bird lice and other small objects, varying in size from one hundred to six or eight hundred diameters. A febrile attack, which kept feeling its way to our brain, and a necessity on the part of Mr. H. to hurry to camp to nurse his brother in the army, stopped the experiments for the time, and afterwards the claims of our country kept us too busy to resume them.

We do not know whether others have done likewise in photographic experiments or not. We did not then know if the experiment had been tried. We were not proposing this as a

method of minute microscopic research then. Our aim was to familiarize a process, enabling a man or woman of leisure to while away hours otherwise idle, provided a microscope, a few chemicals and bits of paper were obtainable. If this process is not already developed we hope some of our readers, having the time and the traps necessary, will take it up, and bring out all there is in it. Our attack of "kidney worm," as the boys in camp kindly called it, spoiled many of our experiments. Mr. H's address is Samuel H. Hypes, Xenia, Ohio; but he is not in the business of photographing now, yet it is possible he could still give useful hints to any one wishing to continue the experiments. We have used his name here without asking for his consent, yet we know him so well that we have presumed on his good nature and kindness of disposition. Our specimens were burned, or at least destroyed during a fire, in 1866. We do not know if Mr. H. still has some of his. Should any of you try the experiment, or if you have successfully tried it already, we would like to see the results.

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DR. WM. A. CORNELIUS.

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A GOOD friend, and a trifle younger than the editor of the JOURNAL; but he has died. The death angel seems to seldom raise the inquiry as to age. Years seem not to be his guide. Does he select the ripe for the trial of "his sickle keen?" He waits not till the "harvest of the earth is ripe," but garners one here, and another there; and it is not for us to inquire by what rule he is governed in the selection of his sheaves. We have no particulars, except that his death occurred the 4th of March. We are promised a report from his professional brethren and neighbors, which we expect to lay before our readers.

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"THE BABY'S DEAD."

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WHEN earth is made so much brighter, so much more capable in the way of permitting human happiness, because babies are in it, can we believe Heaven would be supreme bliss without their presence? He who spake as never man spoke, took babies in His arms, and said, "Of such is the Kingdom of Heaven."

A little girl, walking sadly along a country highway, met a traveler; though a total stranger, her heart could hold in no

longer, and it overflowed in the expression at the head of this item, "The baby's dead." Yes, to her it was *the* baby. She realized no call for explanation. It had had a place in her heart, and it filled it. Her heart was now empty, for, "The baby's dead." But dead to her, yet alive in Christ; dead to earth, but a jewel in the crown of Heaven's King, is not bad, even though ties of affection, heartstrings, are snapped in the process.

All this was called up by a neat little bordered circular, received just too late for our April number. That our readers may be able to help us while we sympathize, we insert it in full, as follows:

### FUNERAL NOTICE.

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'RUBY,'

"Youngest child of Dr. and Mrs. M. H. Chappell, departed this life, March 17th, 1883, of pneumonia, complicated with inflammation of the bowels; aged 3 years, 4 months, 18 days.

"Funeral, Tuesday, March 20th, at 2:00 P. M.; services usual to Society of Friends, at the family residence, East Main St., Knightstown, Ind."

Professor and Mrs. Chappell, the bereaved parents, may rest assured, that they have the sincere sympathy of all who are blessed with babies, and of all whose longing arms are empty.

"I shall go to him, but he shall not return to me."

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Did the angels, passing at the portal,  
For one moment, their command forget?  
Claim the presence of the young immortal,  
When for age the heavenly feast was set?  
Nay, fond mother, there was no mistaking.

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### HISTORY OF INDIANA STATE DENTAL ASSOCIATION

PROF. J. E. Cravens requests us to state that dentists who wish to obtain copies of the History of the Indiana State Dental Association, with its transactions for 1882, will please address him directly, enclosing four cents in stamps, and he will gladly furnish the volume to all such, as long as the supply lasts. His address is Indianapolis, Ind.

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DELAYED.—Our April number was delayed several days from causes not likely to occur again.

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Contributions.

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"A word fitly spoken is like apples of gold"—SOLOMON.

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EFFECTS AND CAUSES.

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BY J. A. ROBINSON, D. D. S.

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[Read before the Michigan State Dental Society.]

THE dentist, the physician, and, in fact, every person who deals in the phenomena of this life deal in effects, because they are in a world of effects. We see the effects: they meet us on every hand, and while the scientists, the philosophers, and the theologians have been these thousands of years trying to ascertain the causes of the various phenomena of life, the real causes are never obvious, and can never be known, because all causes are spiritual, and cannot be fully realized by a finite mind.

It is all very well to endeavor to divine the cause, and man is so constituted that he will be continually striving in that direction on account of the spiritual nature within him that is always leading him higher in attainments towards the limitless ocean of experiences that lie before him.

I am aware that some of you may think that everything per-



taining to the human system can be decided by physiological laws; but you must not forget that all physiology does is to treat of the properties and functions of living beings as they appear to us in their several forms, and in their relation to their natural life, which is only an effect produced by some spiritual law that has never yet been understood. We can explain the laws of *effect* by certain hypotheses and investigations and the facts relating to them, but when we come to the laws of mind, and especially the laws of life and love and substance, it is a branch of science that treats of things spiritual and cannot be fully understood by the finite mind.

The recent discussions among dentists in regard to the etiology of decay of the teeth; the acid theory as against the germ theory, may after all be only different phenomena of the same thing, like the endless discussions as to which was first, the hen or the egg.

The convergence is the same as that among theologians in regard to divine sovereignty and man's free agency.

Each like a pillar rises to the sun,  
And in celestial brightness blends in one.

The same difference exists among physicians in regard to pulmonary diseases; the germ theory has its advocates, and there are as many dissenters. This disputation is productive of great good because it promotes investigation, and that is the real road to progress. Of the fifteen thousand dentists in the United States, not more than five hundred feel interested in the cause of disease and of the theory of decay, while every one is interested in the cure.

In an abstract sense man can never comprehend what absolute truth is, or substance, or love, while they all converge towards one center which is life. Relatively he may; but, relative to what? If it be relative it must relate to something that is beyond the appearance—that is *real*. So we say the apparent thing is only the effect of some cause, and as all original causes are really beyond our comprehension they must be spiritual. Perhaps in the end we may find that it is all the various elements combined in a vitiated state that cause bacteria, and that the life of bacteria is an acid, as in vinegar when the animalculæ are the more numerous the vinegar is the sharpest, and when the life of the vinegar is gone and it is dead, or destitute of the animalculæ,

it is no longer acetic acid but some dead and stagnant substance.

It is very hard to tell which particular passion has demoralized the man, but the man is degraded all the same, and it is a combination of passions as a rule that destroys him, and not any one particular thing.

Chloroform is the great remedy in neuralgia in nearly all its forms. After tooth extraction it is instantaneous when applied to the cavity from which the tooth has been taken. So after a tooth has been filled and slight congestion of the periosteum or engorgement of the blood vessels results in elongation and soreness and inflammation that it seems unbearable, this remedy, applied to the free margin of the gum of the tooth that is affected, will, in almost every case, give immediate relief; as also when it is applied to the parts affected in general neuralgic pains it is a sure remedy. And yet why chloroform produces this effect upon the human system is not positively known. We know the effect and the fact, and it is not empiricism when it does not fail to do the same thing once in a hundred times. It takes but two things to make a good dentist, and these two things are, love for the work, and ability to do it. So in tooth extraction it can hardly be said that these two faculties are brought into action; for, when a tooth is extracted it is *dead*, all love for it ceases, and all desire to make it better has passed away—and what gave it its life is unknowable.

It could hardly be understood, even by special inspiration, as claimed by Dr. Atkinson.

Inspiration is knowledge obtained through the spirit of love. What we get through the lower forms of our being, what we perceive through the senses, are only impressions; they belong to the external world, but what we see with the finer qualities of the mind, as love, charity, benevolence, justice, and those things that go to make up our christian civilization and lead us to obey the Golden Rule, are inspiration; they do not occupy time and space, nevertheless we know they exist, and we realize them by their manifestations as we realize the emotion of charity by carrying the basket to relieve those who are suffering. So, whenever Dr. Atkinson is bitter and sarcastic to his opponents and insinuates that they are imbeciles and idiots, he is dwelling in the impressions on the lower forms of his nature, and cannot claim to be an inspired man in such moments of vexation and disquietude. The most learned men in the profession have honest differences of opin-

ion in regard to the cause of inflammation of the mucous surfaces of the mouth brought about by wearing rubber and celluloid plates for artificial dentures. Every dentist knows that inflammation exists, and while some contend that it is produced by the sulphuret of mercury contained in the plate, others state as positively that it is the heat retained by wearing vegetable plates.

We all know the effect, but who can tell us the cause? It is the effect we have to deal with, and all appliances to remedy the evil are a blessing to the race and correspond to the brakes on the train of cars to save human life and prevent our going to destruction.

Whatever is going to decay is substance changing form; but what substance is, man can never comprehend.

In this controversy in regard to bacteria and acid, the difference is not so much in point of fact as in theory. One mind sees the great universal of the world as a whole, while another mind beholds a sort of personality in all things.

In the end every particle must have some sort of real personality, and, as in decayed teeth and those that are not decayed, when the substance is changing form to a sort of leathery appearance and has passed the dead line from the living tissue to decay, there is always a portion of substance that is alive which is only a short distance behind what is already dead that seems to be food for another life whether acid or bacteria, or both. It is like the inner life that we really have that can only be seen by its manifestations. Thoreau saw the leaves on the trees break forth into singing like the psalmist, and never looked upon an acorn but he saw in that acorn the sturdy oak, and never contemplated a single bud but he saw it swelling forth into the victory of life. So every dentist sees the same thing when he takes the heterogeneous gold and forms the concrete filling.

When we save teeth by filling, we are acting on the same principle *outside* that the creator does *inside*, when he is rejuvenating a plant or a flower, because we are engaged in a labor of love.

All things from the rock up to man are only different manifestations of the same life and only differ in degree.

The mineral is a form of life for the lowest use, the vegetables are forms of uses for the life of man, who is only a step higher and is the most perfect in life and form. The reason the human soul is inspired at the sight of the beautiful, is, because the beautiful is always true.



Mr. Emerson says, "Beauty is the form in which the intellect prefers to study the world, and whoever adorns his work will never tire of doing it." This is particularly true in our own profession. When a dentist sees a tooth that has been filled for twenty years and has stood the test of time, he is filled with the same feeling in kind that the soldier is in seeing the flag of his country or the trophies of war. They are symbols of victory after a hard fought battle that was successful. He is inflamed with courage that is a sort of guarantee of success in the future. The reason we are moved by eloquence or music, is because the forms of music and eloquence find a vibration within ourselves; so in filling teeth the *form* artistic or otherwise, like sculpture, holds us in admiration of the work till it is finished and we reproduce our ideal fillings in the perfect work we are doing. One great objection to the use of amalgam in filling teeth is, that it requires no effort, and where there is no effort there can be no progress. We grow strong in proportion to the effort we make in doing the work.

In labors of art the sterility of man's mind becomes fertile which otherwise would lie dormant, and as we progress we are often obliged to unlearn things that cost us a great labor to acquire. A teachable and willing mind is essential to success.

The imagination—that spiritual part of us—through which we communicate and speak to the animal organism to make known our wants and desires, is strengthened by cultivation as much as the bodily functions and muscular powers, and it is through these spiritual faculties that we make progress in dentistry as well as in music and painting.

Bigotry is the child of ignorance, and skepticism is the child of knowledge; they both lead to aristocracy of self and are real enemies of progress, while the home of all true greatness is built on the road of humility. As a common calamity dissolves all differences and caste in society, so a common effort in art draws all true artists into intimate relations and real friendships. The reason we place such stress on filling teeth is because next to human life is human health, and the mind rises in proportion to the subject to be treated, and we are moved to exertion just in proportion as the subject is greater in our mind and understanding. It is the fuel that kindles the fires in the heart. In filling teeth and in welding gold to make perfect work the finer faculties of the mind are brought out and strengthened.



Dr. Ure, in his dictionary of the minerals and metals, says: "To weld is to press or beat together into intimate and permanent union as two pieces of iron when heated almost to fusion."

Webster adopts Ure's definition but adds that very few of the metals besides iron are capable of being welded. While the above is true in regard to metals when heated almost to a point of fusion, it is also true that certain other metals can be brought into intimate relation and tolerably permanent union under pressure without perceptible heat being applied during the process of welding. There can be no doubt that an infinitesimal amount of heat is produced by filling teeth by hand pressure, and that it is increased by the use of the mallet, which gives mallet work the preference as far as solidity is concerned in tooth filling.

It is now so many years since the welding properties of gold as applied to dentistry were recognized, that few, except the older members of the profession, have any practical knowledge of the skill required in its manipulation when non-cohesive gold was used, and the difficulties attendant on the preparation of the cavities and retaining the gold in position firmly against the walls while the several pieces, as they were introduced, until the final key of the mass, much after the manner of the keystone of the arch, prevented the whole structure from falling to pieces. It would be impossible to enumerate the different treatments to which gold has been subjected to bring it to its most excellent form for dental purposes.

It is enough to say that it is no longer a matter of doubt or dispute that it, when cold or apparently cold can be made into any desired form, and of almost the same specific gravity as ingot gold. This end is attained by an annealing process. When the gold is annealed the surface is covered with crystals of irregular size, but mostly octahedral in form; these, when brought into contact with one another and pressure applied with points sufficiently serrated to force within and interlock the crystals and still not destroy or flatten the surface, cause the gold, owing to its great ductility, to become so firmly united in its parts, that with care it can again, without remelting, be rolled into plate. With tin and alloys composed largely of tin, the same results can be attained, but the process is somewhat different. Although tin is one of the most difficult metals to crystallize, by a combination of metals crystallization takes place and remains intact until it can

be fused into an ingot and then cut with a machine into very fine shreds or fibres which being interlocked can again be welded by the use of instruments similar to those used to condense the gold into a mass of almost any shape or form. The crystals of gold and crystals of tin in the preparation of the new fibrous and metallic filling combined with platinum, make a new metal for filling teeth. Platinum is ductile but non-expansive as a metal, but when combined with tin which is also a brittle metal and non-expansive, it seems more expansive than gold, and when cut into minute fibres, the crystals will corruscate and sparkle in the sunlight so they are perceptible with the naked eye.

This metallic compound, being plexiform, welds to gold almost as readily as gold welds to itself, when the gold is soft and annealed so the surface is crystallized.

In cervical walls (say what we will) gold fillings are often failures, and this new metallic filling bears the same relation to filling teeth, that the grouting does to the superstructure of the building, and every builder understands that grouting is better for the sub-structure in leaky and miry places than even the solid granite. It has long been acknowledged by some of our best operators that tin, as a filling, has less conductive properties than gold, and many dentists assert that it possesses antiseptic qualities that arrest decay in poorly calcified teeth, but tin-foil recoils under pressure either by the hand or the mallet, while the fibrous metallic filling is absolutely without recoil; and experience proves that it changes color less in the fluids of the mouth than tin, and takes a polish second only to gold. It is equally a non-conductor, and possesses all the therapeutic properties of tin-foil, and is much more easily manipulated and adheres more closely to the walls of the teeth.

So when the substructure of the filling is made of the new material, and the gold welded to the new metal, it bears the same relation for service that the steel facing does to the hammer that is made of iron, and the combination makes the perfect instrument for service, as the combination of the two metals makes also the perfect filling. Fillings made in this way are not open to the objections of the plastics that wash, or to the amalgams that fail in almost every instance.

Most dentists know that in preparing gold for dental purposes, it is beaten between gold-beater's skin in book form, and

in the process the crystals are flattened until it is no longer cohesive, but when it is annealed or heated to about 400 degrees the crystals assume their wonted form as much as possible. The why crystallization takes place, or the why the crystals of gold assume their original form at 400 degrees of heat, may never be known any more than the why the amoeba divides itself that it may reproduce itself, except that love and heat and life are the same thing called by different names; they are the effects we perceive of the unknown cause. Of this we may be sure, that all life is the same life reproducing itself continually, and that anything incompatible with the highest love is not life or truth; and as light is the form or expression of heat so truth is the form of love, and love is the form or expression of thought, and all are different manifestations of life, and this form of reasoning is the only satisfactory evidence we have of the endless life or immortality. The apparent cause of inflammation of the mucous surface of the mouth by wearing rubber plates is because there is no bond of union or affection between the surface of the rubber and the mucous surface of the mouth, but rubber has too many good qualities to be thrown away altogether; and the real cause of this incompatibility may never be fully known.

The various theories in regard to the failures of amalgam fillings are as much in dispute as those set forth in the beginning of this paper. Whether it is the electro-chemical theory that acts upon the tooth bone that causes the decay, or the contraction by crystallization, is still a matter of dispute. It is no matter whether the contraction of the amalgam admits the fluids of the mouth to dissolve the dentine so long as the same effects are produced by either or both the causes combined; for, as I said before, it is the effects more than the causes that we are particularly interested in. In learning, and what we have learned, the one is what is behind, and the other is before us. It is like hurrying and being hurried.

The duties of the dentist are two fold. His calling is as sacred as that of the physician or the moralist. He has a divine nature under his charge. He must be of serious mind and well informed that he may be fit to serve and teach others. There still exists great prejudice in the minds of many against advertising, but the only great crime I know about advertising is to advertise "teeth extracted without pain," or promising to do what we are unable to perform. Extracting teeth without pain is a



temptation to destroy a part of the divine architecture, but associations like this and schools and colleges and clinics are to spread the light, and there is no way that can be done so effectually as by the printing press.

If it is for the interest of the dentist to be well informed, it is for the interest of his patrons to be well informed in regard to all that pertains to the health and the preservation of their teeth. Who are the persons who give us the least trouble after service has been performed? Are they not those who are the best informed on the subject themselves? People prize everything in this life in proportion to what it costs them, and those who know most about the teeth are those who take the best care of them, and when they need the service of a dentist they are the first to attend to their duty, and, of course, will be our best patrons and will pay the most liberally. Suppose every person in the country was as well informed as those I see before me, would a charlatan in dentistry be employed? Is it not because the people are not well informed on this subject that so many inefficient operators are abroad in the community? I do not mean the low catch-penny cheat in advertising that will deceive, but a broad general diffusion of dental knowledge that is full of love and light and truth that will save the race, and given under your own signature. The whole world is fast converging toward the freedom of the race, and professions will be the last to yield and let go their prerogatives and self-acquired privileges.

This convergence can be traced through all the pathies in medicine, through all the isms of religion, through all governments towards republican institutions. It is removing all incongruities in society in general as we progress in education, and it is tending towards the unfolding of the cause of all causes that bind us to and make us part of the universal Father of all.

Let us not forget that in the diffusion of knowledge we *must* grow. In giving information "man is twice blessed." When we begin to teach others we begin to learn ourselves. "It blesses him who gives and him who takes;" and while in former times, as among uncivilized races, secrecy was necessary to their preservation and even their existence, the light of to-day should dispel all darkness that has hung like a pall over the past. If in this paper I have been dull, and have indulged in platitudes, and things that seem to be without meaning to some of you, you will not



forget that truth is never a platitude to the honest soul. The Lord's Prayer is never a platitude to the devout soul filled with emotion. The multiplication table is not a platitude to the mathematician, for it is the key to all the higher mathematics. The science of dentistry, based on the principles I have suggested, can never be a platitude to the dentist, who, in his labor of love, has invested all his individuality in his profession, and in his desire to go on to still higher and loftier achievements.

JACKSON, March, 1883.

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## HINTS TO BEGINNERS.

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BY QUERULOUS.

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YOUNG man, you are about to venture into an untried field. You feel that you are fairly qualified for the duties of your profession, and are ready to take a place at the head of the procession,—we mean *profession*. Be admonished, then, first of all, that your calling is one which requires of you a spirit of self-denial, severe application, patience and thoroughness. It should not be entered upon with sordid anticipations of piling up wealth and attaining in a few years, to a condition of folding one's hands and resting in luxurious ease. Possibly the Dean of your College suggested some such ideas as the above, on the day of your graduation. You may depend upon it that your worthy Dean knew what he was talking about when he gave you this advice. The graduates of law and medical schools are always dismissed with similar virtuous admonitions, which no doubt exert a powerful influence over them throughout life, in the way of restraining them from exacting exorbitant fees.

We will suppose that you have selected your field of practice in village, town or city, as the case may be. If you hold an estimate of the dignity and importance of your calling that leads you to suppose that every individual in the community has long anxiously awaited your coming, thinking absorbingly about your mission and his own teeth, so much the better. We picture you as a rather genteel young man, well dressed, affable, and perhaps—modest. The girls will like you, that we confidently predict,—and you will greatly enjoy driving, rowing and picnic

ing with them. You should not, however, despond if, during the first year or two, they seem to be coy about employing you professionally. They must be allowed time to find out how vastly superior you are to old Dr. Plasticus, who divides his time between dentistry and a poultry farm. By the way: you can better employ your tongue than by ridiculing old Dr. P. Some of these old behind-the-times are pretty shrewd, after all. Maybe that while you are secretly pitying Dr. P. and magnanimously wishing that an opportunity would offer you to communicate to him some of your invaluable knowledge about the latest improved methods, he is secretly wishing that he could summon moral courage to tell you that he long ago tried, and has almost forgotten several of the ideas which you introduce as the newest of the new. Possibly he has learned one lesson that you will be slow to learn: that the dentist is made for the people and not the people for the dentist. Possibly you may discover that he catches more fish with his pin-hook than you can catch with your latest improved snap-hook. We knew a young graduate who located in a town, and set up in the business of ridiculing a rival, an old Dr. Hillstopping. After the lapse of several months, our young graduate announced through the columns of the county paper, that he would be absent a week in attendance upon the meeting of the State Dental Association. To his great surprise he found that Dr. H. had preceded him there, and his amazement was complete when Dr. H. arose in the convention and read a paper which seemed to greatly interest that body. He further learned that Dr. H. had long been a member of the association; that he graduated at the same college from which he (the y. g.) received his diploma, and that he declined a professorship in the same college, a few years back, about the time the young graduate was weaned. Inflammatory rheumatism is a picnic, with a cheque for \$100 thrown in, in comparison with the young graduate's vexation and chagrin, as he sat and witnessed Dr. H. holding his audience spell-bound, while he discoursed about leptothrix, and amœbæ, and pyorrhœa alveolaris. And then when *he* in turn got up to enlighten the members as to his method of manipulating No. 60 foil, to have them yawn and look tired, and, perhaps, have three or four committees come in and interrupt him with their reports! The young graduate went home in high dudgeon, but he had learned a valuable lesson; the first one of a special course

of instruction which ought to supplement the regular course of study in all our dental colleges.

But we were talking about your getting settled. You are probably in a strange community. You expect to take the place by storm, because Dr. H., whatever he may be in the dental convention, is certainly an old foggy at home. Somehow or other you don't find as much new work to be done as you hoped for, but you manage to keep fairly busy, digging Dr. H's. gutta-percha fillings out of buccal cavities, and refilling with gold. It is usually pretty difficult to get the dam down below the margin of these cavities, and much moral persuasion is required to get your patient to submit to the unavoidable infliction of pain. You finish one such operation, and your patient concludes to wait a few days before having others of a similar character, refilled. He waits a month,—six months,—and you begin to think he doesn't appreciate the value of his teeth. But be patient: he will probably return before the year expires, and you will want to drill through the crown and remove the decomposing pulp in that tooth. But possibly he will not exhibit that deference for your professional opinion which you think is your due. He will conclude to let the old thing go, and you will ever after have a disagreeable feeling when you meet him on the street. People do not seem to defer to a dentist as they would to a doctor. We must patiently educate them.

Well, the era of wealth-accumulating for you has not yet arrived, but you are confident it will after a while. A dollar a day for spending money will be enough to furnish you two or three buggy rides a week. If you do not care particularly for that kind of recreation, you will perhaps be just as well satisfied to save the money, and so provide against any unpleasantness with your landlord.

But we really think you will succeed. Your income the first year will be \$2,000. No beginner ever varies more or less from this figure, the first year. We *did* once hear of a young dentist whose income the first year was \$1,982. He had joined the church, and was teaching a class in the Sabbath school at the time he made this statement. The second year he became a backslider; made to himself friends of the "mammon of unrighteousness," and his income at once rose to \$4,500. The usual rate of increase in incomes is, say—\$3,500 the second year, \$5,000 the



third, \$7,000 the fourth, and so on, until the dentist owns the county. Dentists are usually very reticent about their wealth, so that the real facts about the lucrativeness of dental practice seldom come to light. The true reason why dentists who have become wealthy so seldom retire, is that there is a certain mild excitement and a peculiar exhilaration derived from working in people's mouths, to which old practitioners become so habituated that they cannot be happy in idleness, or in other less stimulating pursuits.

Don't trouble yourself just now, about other dentists' incomes; and don't use too much figurative language in talking about your own income. If you have gathered from the foregoing that we are inclined to poke fun at you, be assured that we mean to say nothing to your detriment. We hope you do not belong to that class who go about volunteering suggestions about this, that and the other operation or treatment of a case, to fellow practitioners who, in the first place, have enjoyed facilities for learning their duties quite equal to those you have enjoyed, and in the second place, have the advantage of a wider experience than you have had. We have seen such young men, and have enjoyed their self-complacency, though not perhaps quite as much as they themselves enjoyed it. Now we are going to drop our tone of pleasantry, and volunteer, in a modest way, a few practical hints, which may be of value, possibly. Make up your mind in the start, to do the *very best* in your power, for each and every one who comes to you. Beware of sloth. You are about to fill a tooth; the day is warm and you have had a hearty dinner and are not disposed to exert yourself. Why not fill this tooth with a plastic? Your patient does not look as if he could pay for gold. It will take you two hours to fill with gold, against fifteen minutes with amalgam or something else. Now you need grace to nerve yourself to do your best, whether you are to be well paid for your services or not. Shake off your stupor; resolve that you will not smooth the way for an afternoon of ease. If the case requires gold, use it, even if you must work for the price of the material. You say to yourself: Oh, I don't expect ever to see this fellow again. How can you tell? He may send you hundreds of dollars worth of work. Many beginners seem to have an idea that a dentist finishes his work for a patient, and that is the last of that one. Ten to one it is only the beginning.



Every tooth you fill is an advertisement. You may advertise with amalgam or you may advertise with gold, and the fruit is a one thousand dollar income or a three thousand dollar one, accordingly. The difference between two dentists' incomes, frequently represents a difference in energy and application, rather than a difference in opportunity. One man yields to the first call for amalgam: another puts in ten minutes extra work in the way of talk, and gets a good fee for a gold filling, as his reward. The biggest income not unfrequently attaches to the man who talks most glibly. You say, of course, he is a quack. Oh no, not necessarily.

Again: learn to seize the first opportunity, and work when a chance first offers. Don't put off your patients needlessly, as some do. Send word to that fellow who is waiting for you down in the drug store that you have a chance to work, and will play checkers with him some other time. Work *now*, while you can, and avoid the habit of procrastination.

The successful dentist is always a student of human nature. He never relies wholly upon his superiority in his art; for he knows well enough that a man may excel his rivals in skill and yet not gain practice. We have seen dentists deport themselves as if they thought they were patronizing their patients, instead of being patronized by them. Now an individual comes to you to consult you professionally. He defers to your opinion as to what may be required; at the same time he will think you somewhat singular if, after having seated him in your chair, you proceed to act the part of the autocrat, as in the following conversation we recently overheard:

"Doctor, this tooth here has been aching off and on for several—"

"Open your mouth!"

"It has hurt me consid—"

"*Wider*, WIDER!"

"Whenever I—"

"Tell me which tooth."

"Don't you think it had better be—"

"That's all right; never you mind about *that*."

No man who presumes on such rudeness as this will add to his popularity by his actions. The young man who assumes a lofty superiority and disdains common civility, will lack for pat-

ronage. At the same time, firmness and decision, when properly exercised, are invaluable qualities. It pays to decline to work for some people.

Be careful how you handle your patients. Some men have a faculty of moving about quietly and calmly, while proceeding with an operation, dropping a kind word of assurance occasionally (which costs nothing), and gaining the confidence of the patient. Others grab hold of the patient's head and thrust it back against the head-rest, as if he were a culprit about to be decapitated. Observation will convince any one that there is much needless infliction of pain by many operators. There is too much blundering along with dull excavators, too much abuse of the engine, and of finishing strips, and of clamps. Some operators seem to regard it as an admirable exhibition of heroism to hurt the patient considerably more than is necessary. Does that hurt? we recently heard a dentist ask his patient. Well, I don't care if it does, he added, (good-naturedly, to be sure, and as if he really expected the patient to appreciate the joke.) Do we gain anything by exhibiting contempt for our patients' terror? We have known the dentist to be shunned on the street by those whose resentment he incurred through his heartlessness. It is not necessary to suppress sympathy in order to preserve one's standard of excellence in operating. It will be dollars in your pocket simply to express to your patient after you have finished a severe operation, your regret that you had to hurt him so.

The art of collecting needs to be thoroughly studied. It is just as well to give your patient, whoever he may be, some hint of what your charge will be. Never lower your fee. It is far better to *give* your patient the difference between what you want him to pay, and what he can afford to pay, than to surrender to him a certain advantage (which he may use to your annoyance), if you yield to his claim that you charge too much. This may seem to be a distinction without a difference, but it is not. The chances are, that if you do not make him perceive that he is under obligation to you, he will conceive that you are under obligation to him.

There is no reason why dentists should not collect their bills monthly. In just so far as you extend the limits of your credits you increase the risk of never collecting at all. People in plenty will be found who are willing to take the risk of being in funds

to meet your bill six months hence, if you are disposed to be lax about it. The safest plan is to work only for cash. What you lose of patronage, thereby, you will more than gain in the sense of security you will enjoy.

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## ZINC DIES FOR SWAGING PLATES.

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BY WM. H. DORRANCE, D. D. S.

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"Come now, and let us reason together."  
"The proof of the pudding is in chewing the string."

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IN the March number of the OHIO STATE JOURNAL appears a short article entitled "About Impressions and Other Things," in which the writer, a dentist of "thirty-seven years practice," offers to students and others who have been instructed "in annoying and uncertain methods," "a few helpful thoughts," interlarded with some that are not helpful, and seasoned with running criticisms on "uncertain methods."

In this article its writer reiterates the advocacy of the exclusive use of a non-shrinking alloy for "dental dies," without, however, offering any argument in favor of such exclusive use, other than the fact that he has used it for thirty years.

It is therefore the purpose of this paper to state a few facts (the partial result of experiments now in progress), and give a few reasons, by way of argument against the habitual use of non-shrinkable dies. And, inasmuch as the above-mentioned writer makes some blunders in the written and implied criticisms on methods, as he says, "written and taught in dental journals and colleges, or some of them." It is also proposed to examine those criticisms in a critical way, and, in a running commentary, to offer suggestions of methods that will appeal to the reason of those interested in metal-work.

The difficulties in the practice of swaging plates are not so much due to the inherent unmanageableness of the materials used, as to a lack of skill on the part of the operator. It is doubtless safe to say that ninety-five per cent. of the dentists of to-day are entirely unacquainted with the practice of swaged plates, and it is equally true that the five per cent. who are, per contra, practically familiar with the work, are so from long prac-

tice. No one, however well equipped naturally, can be an expert in the art and science of dentistry, in any of its branches, in a few short years, and for the many, a lifetime is all but too short to reach the highest point of excellence. This is especially true in prosthetic dentistry, and it is not so much "in consequence of the annoying and uncertain methods in which they have been instructed" that makes men "stick to rubber work," as it is due to the lack of the practical ability that comes from long habit, and the skillful training of the faculties and fingers. Now, theories, though "fine-spun," when backed with facts, become principles, and principles are worth investigation, and before considering the practice of swaging plates, it will be well to state the following fundamental principles:

An upper plate is perfectly adapted only when it rests with equal bearing upon the surface and structures which it covers, which surface is invariably unequal in its density and consequently in its resistance to pressure, when pressure upon any point of its lingual or buccal surface fails to dislodge it.

These principles are relatively true in regard to the lower plate. It may also be stated, as another axiom, that even the best plaster model represents the mouth only in one particular—that of approximate shape, as it is impossible with a material of equal resistance throughout its bulk to represent a surface of unequal density and resistance.

Hydrated calcium sulphate, of good quality, and properly prepared for taking an impression, will, from the moment crystallization begins until its completion, expand in the ratio of one two-hundredth of its bulk, in other words, the co-efficient of expansion is .005. That is to say, an impression of a good plaster in its best condition, which has a breadth of two inches, has expanded one hundredth of an inch. If the same quality of plaster is carelessly prepared—as we may claim a large proportion of it is—the co-efficient of expansion will run as high as .01 (and even .02 in some cases), or, in an impression of a breadth of two inches, will be increased one-fiftieth of an inch. If then the best of care is taken, with the impression and the resulting model, the latter which has the width of two inches, is larger than the mouth which it is supposed to represent by one-fiftieth of an inch, and may be larger by one twenty-fifth of an inch, or even more. Should the varnish used to protect the cast from moisture and in-



jury be too freely applied, the cast is still further enlarged, and though it is reasonable to suppose that the process of molding would leave the mold slightly larger than the model, it will not be taken into account in this connection. Zinc, in being raised from 75 to 773° F., has a co-efficient of expansion of .011, but has this noticeable peculiarity, viz: Its contraction on cooling from the fusing point to, say 75°, is not equal to its previous expansion, especially is this noticeable in the case of the cast in the open mold, where the contraction is greater in the center of the exposed upper part and diminishes somewhat to a point not quite reaching the lower surface. Let a case be properly taken through the steps of manipulation from the plaster model to the zinc die, and the die will be found to be, for two inches on the model, one seventy-fifth of an inch less than the model, the shrinkage of the zinc doubtless being partly compensated by the slightly increased size of the mold over the model.

An alloy of one part copper, two parts antimony, and eight parts tin, will be found to have a co-efficient of expansion in *cooling* from fusion to 75° of .003, nearly, and a die of that alloy, under like circumstances, with the zinc die, will be found to be one two-hundredths of an inch larger than the model, and consequently larger than the mouth, (by its own expansion *plus* the expansion of the plaster), whereas, the zinc die is about that much smaller than the mouth, and with very infrequent exceptions, this proves an exceedingly desirable difference, the slight compression of the soft tissue materially aiding in the stability of the plate. It is notorious that the mouth adapts itself to adverse conditions, and instances are innumerable of the wearing of wretchedly illfitting plates, which are retained by the ready adaptation of the soft tissues covered by it, and the use of the muscles of the face, but are clattered about by every action, and are ready to fall at the slightest touch. Serious injury to the mucous membrane and gums is the result of wearing such dentures, and with the lapse of time the injury increases. No one with any desire to serve humanity to the best of his ability, can look with complacency on such dentures, or wish to see the number increased.

Although the adaptation of a plate approaches perfection in the ratio of the perfection of the impression, it is the exception rather than the rule, that the plate requires no change in fitting it to the mouth, or cannot be benefited in some respect, and in

the swaged plate, the intelligent skill of the expert manipulator is afforded abundant swing in the matter of fitting. Quite a little toward securing perfect adaptation may be accomplished in the handling of the impression and model, but it will quite invariably be found that when the plate is perfectly adapted to the mouth, it will no longer even go upon the zinc die, much less the plaster model from which it was obtained, and any attempt to force it upon either of them should not there be made. But when once it is perfectly adapted, the reasonable and safe course is to prepare a model from the plate, to be kept for future reference, and one will meet with the proof of the slight expansion of the plaster, in the removal of this cast from the plate. Now the alloy known as babbitt metal has its use to serve, and should be in the hands of all who would do metal work, so, too, there are other materials which have their place, as tin, plumber's solder, brass, etc. One, to do well, should choose from the materials at command that one or those which will best serve the end. Once in a while it will be found that the plate swaged on the zinc die is somewhat too small, and then the unshrinkable alloy becomes useful.

In examining the criticisms referred to at the beginning of this article, let some of them be taken in order.

The writer says: "To say that plaster will not make a sharper impression than wax or modeling compound, is arrant nonsense;" and without knowing whom he means to hit in that sentence, and while agreeing in the main with the statement, it is well to say that those who are familiar with the use of the impression materials mentioned, viz: wax and modeling compound, (composition *magnifique* being by far the finest of the compounds,) together with others of the same type, regard them as equally valuable in their especial province and uses as plaster in its uses. The balance of the paragraph, however, demands notice: "And to compel a student in college to spend weeks of valuable time in learning to take wax impressions, (and I have known some such, who, after graduating, could not take a plaster impression successfully!) is an imposition that ought not be tolerated." The student or practitioner who, even at the expense of "weeks of valuable time," can uniformly secure a good impression with wax, modeling compound and gutta-percha, not only is in possession of a valuable acquirement, but is much better

prepared to take a good plaster impression. And furthermore, those in the college doubtless referred to, who "could not take a plaster impression successfully," were also unable to take a good impression in wax, and will probably never be successful in any operation involving skillful manipulation. Moreover, the criticiser can be shown models made from wax, modeling compound, and plaster impressions, the work of students who three months previously had never seen an impression, the equal of which would bother nine out of every ten dentists, as they run, to produce.

In the next paragraph he says: "Here again come in non-sensical theories about the use of shellac and oil in filling the impression, etc." Those who have acquired the habit of separating the impression and model with water alone, and are familiar with the elegant results, will laugh at the statement of the "thirty-seven years" practitioner who says, "the thin coat of oil is equally unobjectionable," and will not be induced to give up the beautiful, sharp and clean surface of the water-separated model for the one blurred by the use of oil. The thin shellac he speaks of is well enough in difficult cases, provided it is thin, when it answers as well as any other coloring to show the line of separation; but how often, instead of thin shellac, it is thick shellac, and becomes a coating instead of a marking, to the detriment of the model.

In the succeeding paragraph, after speaking with an exclamation point of the method of overlaying the die with lead, foil or sheet, to relieve pressure, he says: "The method ought to be patented." Then follows a curious sentence: "Scrape the rear of the cast slightly between the coronoid process and near the center, from where the edge of the plate would come, forward one-quarter of an inch." Why not scrape it between the occipital protuberance and "and near to the center," and have that method patented? It is to be supposed that he refers to the maxillary tuberosity.

It is true that oiled sand is "always ready for use, not needing to be renewed for weeks or months," but is also true that this particular advantage is more than counterbalanced by the penetrating odor of the burning oil. Tastes differ in regard to smells—the most people preferring something less pungent. And

then he says: "In view of such results," (what results?) "it is a pity that students should be compelled to devote so much precious time to the making of zinc dies, a method that is perplexing, slow, and uncertain in results, and which should, long ago, have become obsolete." Does he mean to convey the idea that there is any possible difference in the manipulation of zinc and the alloy he advocates, save that of the somewhat increased melting point of the zinc? Certainly in every other respect zinc has the advantage.

It is to be presumed that it is on the score of economy of expense of apparatus (rather than time) that he advises: "if the case is badly undercut, make a 'core,' thereby avoiding in a simple (!) way the necessity of using the so-called 'Hawes' flask," as he would find it difficult to induce anyone who is in the possession of that elegant flask (though its cost is ludicrously high), to take the roundabout way of coring an upper model. Our critic will possibly mislead some when he says, "if careful to wipe off any base metal that may adhere . . . there will be no need of putting the plate in acid before annealing," as it is not always possible to wipe off the base metals from the oiled plate, and one might better err on the side of safety and use the acid both before and after annealing. The best work is produced when the plate, at all stages of the work, is kept not only clean, but also with a surface free from scratches and marks, and even well polished.

The next paragraph gives comfort to the lazy man, and very poor advice to anyone, together with two grave errors. He says: "Don't hesitate to cut your full upper plate in front and lap it, for while it saves time and annoyance, it also increases the strength of the plate at the point where there is the most strain,"—error one: for the strain is not a pulling strain upon the lap, but a pushing strain, which would be more likely to buckle the plate on either side of the lap. And, "there is far less danger of the plate warping than if it has been cramped into an unnatural condition by swaging without cutting;"—error two: for if the plate has been kept properly annealed the shape is no more unnatural, as far as the disposition of its molecules is concerned, than at the start, and consequently no more likely to warp in soldering, if the heat is properly applied.



The closing paragraph of his article also needs notice in several points. A rather slipshod (though sometimes admissible) method of backing up teeth is advised as the rule of work, as it "saves time," and is said to be "just as good" as better methods. Though skill and long practice will do much, it is reasonable that no one can so well shape, fit and adapt a backing to a plate tooth when it is hidden by the investment and adjoining teeth, as before it is invested, neither can it be controverted that the work can be just as expeditiously done before investment. No wonder he advises to "invest in plaster and sand," which he says "is preferable to asbestos, because it is not so yielding in backing up," and "in a sheet-iron ring" to hold his work together! He has in that sentence stated the only possible objection to asbestos, but if he will discard his plaster and sand, and intelligently use plaster and asbestos instead, he will soon find it to possess the following immense advantages: in equal bulk with the sand investment it will require less heat to do the work; the investment may, and should be, much thinner; the sheet-iron ring will be utterly superfluous, for with the proper proportions of plaster and asbestos, (which are easily determined) the investment will not change, warp or crack.

To those who are not familiar with this investment, the following method of determining the proportions will be valuable as a guide. In a sufficient quantity of tepid water dissolve from three to ten grains of potassium sulphate, using more with hard water than with soft water; add the asbestos (short fibers preferably) and stir until it becomes saturated, pour off the surplus water, should there be any, and add plaster until it is as thick as can be conveniently handled.

But to return to the paragraph under examination: The writer tells us to "use thick gold, say about gauge 24"—and as he does not tell us whose gauge, we will suppose it to be Brown and Sharp's U. S. Standard. Now, plate of that gauge is about the right thickness for an ordinary plate, and certainly the backing should be much thicker. It only remains for one to wonder why one needs to "burr off the heads of the pins," after soldering, when one has previously "cut off the surplus with a sharp tool."

March 29, 1883.

## THE AMERICAN DENTIST IN GERMANY.

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BY DR. WILHELM FRAENKEL, CHICAGO.

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“Dr. X., American Dentist.” These familiar words meet one’s eye very often in every large city in Germany. Why do these doctors find it necessary to add the word “American” to their already well earned title? The German dental graduate would answer this question in the following manner: By omitting the word “American” he would not only defraud himself, but the German public: for he would not dare to practice dentistry in Germany without holding a diploma from an American college. Why is it that the American dentist, on his return to Germany, has one or more law suits for using the title D. D. S? In many cases we have to thank our worthy German dentists for such proceedings. But the more court cases an American dentist has to go through, the greater is his financial success. For instance, our American dentist, Dr. Wm. Sachs, in Breslau, has a growing practice of from sixty to eighty thousand marks a year, although he is compelled to defend himself at court almost every year for using the title Doctor of Dental Surgery. This title he has well earned, after years of hard study in the Philadelphia Dental College.

Why do so many German students come to America every year to study dentistry? This question is easily answered. The reason is, that the majority of the German public prefer the American dentist to the German, because of his more thorough knowledge in his profession. And yet he has to contend against impostors, who deceive the public by advertising themselves as American Doctors of Dental Surgery, but who have bought their title in America from such fraudulent institutions as the late Buchanan colleges, men who have never seen America. Such men make the public distrustful even of the graduate who has well earned his title.

But the constant war between the dentists of both countries concerning knowledge, is not approved by our learned people. It will be necessary to explain the method of instruction in both German and American Universities. The lawful time for the study of dentistry in Germany is two years, and those only can

matriculate who have a classical education. This last point is the only advantage the German university has over the American college. The study of dentistry is divided into two parts, theoretical and practical. The first is of great use to the student, the latter is actually necessary. The German universities are trying to combine these, but without success. A look in the so-called clinic of the university will give ample proof.

The dental clinics in Breslau—the best of all of them—is held in two attic rooms, together ten by twenty feet. In these small rooms we find two dental chairs, and also the whole mechanical laboratory, and the museum. This university is visited half-yearly by some thirteen or fifteen dental students, who practice on some seventy or eighty patients. The opportunities for dental education are as follows: Four times a week there is a mechanical and operating clinic, (one hour each time), twice weekly filling teeth, three times weekly a theoretical lecture concerning dentistry. Besides these the student has to study anatomy, physiology, general pathology, therapeutics, and surgery. I mention Breslau, because it is one of the best established universities in Germany. For those two dental chairs, also for a dental engine, we have to thank Dr. Bruck, the only lecturer of dentistry in this city. Although the allowance from the state is very small, Dr. Bruck is doing all in his power to bring it to a higher standard.

After mentioning the best university, I will now speak of the worst, which is, without doubt at Halle; for here is not even one dental chair, and the student seldom handles an instrument for filling teeth, after being one year or longer at the university. All they acquire is a very imperfect knowledge of fitting artificial teeth for models, not for patients. That is a specialty with Professor Holländer, lecturer at Halle. During my studies in this city it was very often the case that all the students present had to be sent home for want of patients, or had to listen to lectures so full of Latin expressions that they were of little or no use to the students.

Similar to the above are the dental departments at Berlin and Kiel.

Let us now take a look at the American colleges. So far as theoretical teaching is concerned, they are as high as the best German institutes, and as regards practical instruction, far in



advance of them. These have sixty or more dental chairs, and mechanical departments and museums, containing all that is necessary for the use of the professor and the instruction of the student. They possess the latest and most approved instruments, and a complete chemical laboratory, always open and free to the student. The dissecting rooms are in keeping with the rest. For skill the professors have the highest reputation in the world.

With eighty to one hundred patients a day in attendance, is it to be wondered at, that the American student with the most approved instruments in his hand, from the first day of his study, is far ahead of the German student, who after long theoretical studies, has to wait sometimes for weeks for a single patient? Practice and theory go only in the American College of Dental Surgery hand in hand! I leave it to the intelligence of the reader if the American diploma is not of greater importance than the pretensions of the German dentist would imply.

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## Correspondence.

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"I charge you that this epistle be read."

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CANTON, APRIL 24, 1883.

*Dear Doctor Watt:—*

A FEW weeks since Mr. C. C. B., deputy clerk of this county, became, as his physician said, prostrated with cankers of the mouth. After several weeks treatment for these, it became evident that two undeveloped wisdom teeth were causing the misery, and I was called upon for an opinion, finding the one on the left side well through, and the other merely perceptible on the front corner, the balance being hidden by the apophysis of the process, and most firmly impinged in front by a full row of great molars and bicuspid. The parts on each side were so swollen and painful that food could with great difficulty be admitted. An appointment was made for their removal at my office, and by me, on the following Saturday, at four P. M., the physician, who had treated him for cankers, to administer ether, which he began to do by preparing a cone from a daily paper, and placing a napkin inside. The administration continued, with frequent removals of the cone for ether, at which times the patient appeared



to lose most he had gained, and with frequent encouragement in talking the case proceeded until about two ounces of ether had been consumed. At this time he sprang to his feet, and with the mad strength and crazy eloquence of a lunatic, declared his sanity, and placing his hand upon his hip pocket as though to draw a revolver defied us to touch him. Then springing through the door into the hall, neared the head of the descending steps and motioned to jump. I approached him, and at this time the ether began to leave, and he soon became quiet and penitent, not knowing what he had done. I then asked his physician and him if they would permit me to administer the ether, to which they both agreed. Turning to him, I said, in a solemn tone, "it's death to the man that speaks." Will you accept this, and keep quiet, and take this ether without resistance and give wholly up to me? I will, I will. *Death* may be near you, now *change* your manners! And like a man of courage, that he is, he took the ether entirely through his nostrils, administered in rapid drops from a two ounce bottle, through one thickness of a coarse linen towel, without the least hesitation from the start, to the end of two ounces. I held up his hand and cried aloud in his ear, hold it up? it fell, and but for the phenomenal tooth that lay away back secretly defying me, this would have been one of the most successful and speedy operations of my life. The left one was speedily thrown out, and as I shouted "good by *neuralgia*" I met my stubborn enemy in the next. And here pardon me while I express my doubt as to any better forcep for *this* tooth, than I had. In ten years it never before let go, nor slipped; and the elevator, or Hendrick's, or *ropes* that strained at the Egyptian pyramids, would need water to have taken this tooth from its bed, with the removal of some of the mountains of bone in front of it. Therefore, after a desperate effort, until completely exhausted, I let go. A few breaths more of ether, which I regretted to give at that time, and having changed tactics, I seized upon the great molar, next in front of it, and secured it quickly, and the victory was mine, for easily the great two rooted *Dens Sapientia* showed a big inch of roots, turned directly back into the process. The patient soon recovered from the ether, having endured an awful tugging of probably five minutes or more, since when we have heard of no more cankers.

Truly yours,

J. H. SIDDALL.

[Will the reader please compare the following with the correspondence at page 146, March number?—ED. JOURNAL.]

TARBORO, N. C., March 22, 1883.

DR. GEORGE WATT—

*Dear Doctor*:—I notice in the March number of your journal the personal communication addressed to you printed in full. While it was intended as personal, yet believing you are *hors de combat*, I will not challenge you for not considering it such. In consideration of the fact, however, that it has been published, I desire to state the condition of the case to-day, and the treatment employed to bring about the pleasing result hereinafter described. I found, upon examination on the 22d ult., that the use of carbolic acid and glycerin had been of decided benefit, and the character of the discharge was entirely different. Instead of there being a thin, offensive, watery fluid, I found laudable pus, in small quantity, discharging, but from the conditions present, deemed it necessary to cauterize the track of the sinus; so injected tincture iodine, full strength, protecting the soft parts by means of a thin sheet of rubber, with a hole cut in it, stretched over the parts. This was repeated every third day for nine days, when its use was discontinued, and a solution of carbolic acid and glycerin (equal parts), fifteen drops to the ounce of tepid water, was used in its stead, the sinus at this time having commenced to granulate at the bottom, evidenced by a shortening of the track and the small quantity of healthy pus discharged. This treatment has been kept up daily since then, occasionally having to burn down the granulations in the sore with caustic, they being at times too exuberant. Patient has remained here under my charge for just one month to-day, and will leave for home to-morrow—dismissed, with a good scab just ready to drop off. She has had no pain during the entire treatment, save that occasioned by the use of caustic. In conclusion, would ask that in publishing this, you call attention to the former correspondence, which gives a history of the case.

Yours respectfully,

ISAAC N. CARR.

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#### A HINT.

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*Editor Ohio State Journal of Dental Science:*

Feeling that perhaps some who are using the S. S. White engine would enjoy still more freedom in the flexible arm, I

would suggest that they procure the flexible part of the arm of the Johnston engine, and add this at the lower part of the White cable and sheath. To do this the Johnston is reversed end for end, a thread cut upon the smaller end to enter the hand piece; then cut out sufficient of the old cable and sleeve to take in the new addition, soldering the cut ends of the cable into those of the larger Johnston cable. Screw all together, and you have an improved connection, working so quietly and freely in all positions, that you would not take it out again for many times the extra cost and trouble.

H. H. W<sub>AY</sub>, D. D. S.

The above suggestion is probably all that is claimed for it, that is that it is worthy of attention. Some of the members of the Ohio State Dental Society were recommending a similar device at the meeting last winter. Some of the brethren from Cleveland, if our recollection is not at fault, had been trying and were then recommending it; but we have seen nothing in the periodicals of the profession in reference to it. We believe it was the American Dental Convention that, long ago, on motion of the late Professor James Taylor, decided that the man who first promulgates, rather than the man that first uses an improvement, is entitled to the credit. This will apply here.

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### A GENERAL CLASSIFIED INDEX.

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At the last meeting of the American Dental Association, Dr. J. Taft made some remarks in favor of offering a prize for a classified index of all the dental literature of the United States. This is a step in the right direction. For if a student wishes to investigate any one subject, and attempts to ascertain what has been written on it, he is at once confronted with the task of wading through perhaps 300 volumes of dental journals, whose indices, as a rule, do not give the remotest idea of their contents.

If, however, it were possible for him to get a general index, one in which every fact, idea or thought was properly indexed, how much easier would it be for him to find what he wanted?

The labor of making such an index is almost Herculean; but if it was divided it might be accomplished. The following plan may be feasible: Each of the older publications might



issue such an index of their journals in separate volumes. The newer ones could each prepare one and append it to the indices to their current volumes, whilst the A. D. A. could employ some one to prepare an index for the extinct journals, and embody it in the printed transactions of said society. Then each journal could prepare such an index to each future volume, instead of the customary almost useless index of titles; and in a few years the A. D. A. might combine all of these and issue them in one volume.

The benefits to be derived from such a work are almost incalculable. The members of our societies would by that means be better able to prepare themselves for the discussion of topics selected for their consideration.

I hope my few crude remarks may call attention to this subject, that some plan may be adopted that will insure success.

K-NINE.

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## GOLD AND AMALGAM COMBINED IN FILLING.

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*Editor Ohio State Journal of Dental Science:*

WHEN I commenced the practice of dentistry, and for quite a number of years after, I regarded gold as the only reliable material for filling almost all grades of teeth. Amalgam I would not use at all, at any price. I had a strong antipathy to it, for various reasons, but the strongest one was its abuse by men who could not perform a decent operation with anything. I have become rather more conservative, and find amalgam has its uses. I do not regard it to-day as the equal of gold, to preserve tooth structure, except in some cases of peculiar formation. I have seen some where I found it preserved the teeth as well as gold in adjacent teeth. My object in writing this paper, however, is to give my experience with gold and amalgam in combination. I have tried tin and gold, gutta-percha and gold, in approximal cavities, but have found them not up to my expectations. My prejudice against amalgam kept me from experimenting with it for some time, but about fifteen years ago I commenced its use. How I gradually came to combine it and gold, I will tell you: One of the first operations I performed with cohesive gold, some sixteen years since (before that time had used soft or unannealed foil exclusively), was the building of about half of the left infe-



rior first molar. Two years after, the patient, in eating taffy, I think, broke off nearly half of the remaining tooth portion, but did not disturb the gold. I built on the broken portion with cohesive gold, drilling into the gold for retaining pits, and thought there was a perfect union, but in about six months found myself mistaken, for, in eating some hard substance the built-in portion came away. I hardly knew what to do; did not like to remove all the gold and rebuild the tooth. The patient was not willing to pay for such an operation. I finally decided to try amalgam, put on the rubber dam, cut into the gold and made a bright surface, made some under cuts, and then with amalgam built on the broken portion, contouring to form of tooth; cautioned the patient about biting on the tooth for a few hours, and to call the next day. He did so. The union seemed perfect. I burnished the filling and he departed. I watched the case, as the patient had the tartar removed at least once a year, and found it remained all right without sign of decay or breaking away. And to-day the tooth looks as though it would last for many years. After watching that effect for two to three years, I began to use amalgam for the repair of gold fillings. Where I found decay at the cervical wall, and the filling not loosened, I cut away enamel sufficient to allow me to thoroughly remove the decay, and filled with amalgam. I have tried this experiment on all classes of teeth, but mostly the poorest, and in every instance the decay has been arrested. I joined two gold fillings in a bicuspid (the lingual portion of the tooth having, from decay, broken away), excavating thoroughly, cutting the gold bright, and building on a cusp. The tooth is to-day strong, with no sign of decay. This tooth was treated at least five years ago. I could mention many other cases treated in the same manner, not one of which to my knowledge, has proved unsuccessful. Three or four years ago, having noted the success of these experiments, I queried, why would it not be good practice to combine amalgam and gold in filling teeth? I came to the conclusion that there must be some preservative quality generated by the combination, that if it had arrested decay around fillings, it ought to prevent it; and I commenced its use to a limited extent, for I was not sure, even then. When I found large, deep cavities that run below the gum, however, I used it, and so far am perfectly satisfied with the result; in fact I am now using the combination in all cavities from the

cuspid's back, that are sufficiently large. I have not as yet used it in incisor teeth. In using, the cavity should be thoroughly excavated as for gold, then mix the amalgam very stiff, and pack from the cervical wall one-quarter to one-third of the depth of the cavity; then with unannealed gold cylinders, commence at the buccal wall, and pack thoroughly, holding the cylinder firmly, lay another cylinder on to the first, and another to palate wall. The gold will be thus forced into the amalgam. Then slightly anneal the cylinders, and pack as before across the cavity. Then with cohesive gold pack towards the palatal buccal walls, which will bind the whole filling; and finish with cohesive gold. Then burnish the gold at the edges of the cavity, and finish in contour, or flat, as the case may require. Then, with a thin, sharp instrument or thin burnisher, cut through the amalgam and burnish to the cervical wall, and finish with sandpaper disk. I like to have the patient come in the next day and burnish. After a time there will be a dark line at the cervical wall, but no discoloration of the tooth or the gold, and the amalgam only slightly so. I have yet to see the first case that is not a success; and from five to ten years is a pretty fair trial. Why this combination preserves tooth substance I do not know. I have a theory—we all have—but that I am not going to give you at present. Probably we shall find out why sometime, but I give you facts. I have hesitated a long time about publishing my experience, as new practice is subject to rather hard criticism at times; but I believe we ought to be willing to take it, if we think we shall do the profession a service. I am so thoroughly convinced that this combination is good, that I want all good operators to try it. A man must understand unannealed and cohesive gold to use it successfully I think. I do not recommend it as easy; in fact I consider it more difficult to use than using either soft or cohesive gold alone, but handled carefully it makes a perfect filling. I have a patient now whose teeth are delicate, of poor quality, and I am filling all the approximal cavities with this combination, and shall have an opportunity of watching the success of the practice, and hope to give you, some years hence, a good account of it. I find I am not alone in this practice, however, for I read some time since a communication from Dr. N. W. Kingsley in the *Dental Practitioner*. My experience and his are identical, and I wish to add my mite to his. Should the decay here reach nearly to the

pulp, cap that first, of course. If dentists will give this combination a fair trial they will be pleased with the results.

NICHOLAS N. NOYES, D. D. S.,

BOSTON.

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## Societies.

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“Wherewith one may edify another.”

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### MISSISSIPPI VALLEY ASSOCIATION DISCUSSIONS.

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REPORTED BY DR. E. G. BETTY.

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[Continued from May Number.]

SECOND DAY, THURSDAY, MARCH 8TH.

MORNING SESSION.

The Association was called to order by President Clyde, and the minutes of the previous session were read and approved. The discussion of the second subject on the programme was resumed.

PROF. J. TAFT.—This subject is one of the very large ones, and there is material sufficient in it to furnish discussions for two or three days. In regard to the causes of dental decay, there is so much extraneous matter thrown in, and so many theories elaborated, that the whole subject appears to be greatly confused. When you ask a man his views upon dental decay, he will answer “Oh! I don’t know anything about it.” There are a number of things concerning dental decay, that are well fixed and definitely understood. Opinions upon all subjects, of course, differ; as for instance you ask one man, what is an element? He will say “oxygen;” another will tell you “he does not know.” So it is regarding this subject; since there are so many conflicting views and theories, we must take a stand and find out just what we have attained. We know of what the teeth are composed, and that one class of the constituents is inorganic, and the other organic. We also know that the teeth possess vitality. A prominent man in the profession some years ago maintained that the dentine possessed no vitality, and that this was especially true of

the enamel. His theory was that the teeth are mineral, but he has now changed his views. After the teeth are formed, they undergo some changes; for instance, their density increases. Now what can it be that makes this change, if it is not vitality? In the order of development, the organic structure is first built up, and the inorganic is afterward supplied; this we know and understand very well.

Now as regards decay; the inorganic is first taken away, leaving more or less of the organic. The varieties of decay differ, presenting different aspects. In some varieties the organic and inorganic constituents both disappear; in others, the one or the other may be left in greater or less quantity.

In the dark decay, the structure is broken down, but both constituents remain, and that fact probably prompted the statement of Prof. Mayer, that "in the dark decay he found a large portion of the inorganic constituents remaining."

In some varieties of decay, the organic portion retains its form in a marked degree. In other forms the organic structure is wholly broken up, when the inorganic portion is removed. There are agents that produce decay of the teeth, or will dissolve the organized phosphates, and the question naturally arises "can these agents—these acids be found in the mouth?" That question, however, has been ably settled to the satisfaction of all. These acids *are* formed in the mouth, and when we find that the inorganic parts have been removed, we are pretty well satisfied that there must have been an agent to produce this effect. A new theory is being promulgated to account for the whole process of decay—that is very confusing to the young man just entering the profession. Many of the new theories of Pasteur, Koch, and others, still require additional proof to fully establish all that is claimed for them. There are parasitic growths of various kinds, and the question is, how far are they concerned or instrumental in the process of decay. One theory is that these organism exude from their bodies a fluid that dissolves or decays the tooth substance and structure. Young men are far more likely to become confused with such theories as these than are men of ripe experience and judgment.

Decay of the teeth is not a pathological process. A pathological process can take place only in a living structure. In tooth



decay, the pathological occurs before devitalization, and then the decomposition supervenes.

The statement that dental decay is a pathological process is misleading and should be corrected. In most decays of the teeth the inorganic constituents are first removed, leaving the organic, and it is in the residuum of the organic that these parasitic growths are found to exist. They cannot exist in the tooth before decomposition takes place. Parasitic growths in other parts of the body exist as secondary matter.

DR. H. A. SMITH.—In the nitric acid decay, when the inorganic portion is being destroyed, I would like to know if there is sufficient organic matter in the exposed layer to generate enough acid to produce a progressive decay exclusive of the introduction of putrefactive matter from the outside?

DR. J. TAFT.—Before caries occurs there must be devitalization in the part.

DR. WRIGHT.—I have been very much interested in Prof. Taft's remarks and especially do I agree with him in that there is no *real* conflict in the theories of decay, it being as he says, more confusion than conflict. I think that the several theories are merely different phases of the same question, and that they should all be gathered together under one banner.

For instance, inflammation is an abnormal process, in which there are a great number of distinct changes in the elements in the capillaries and larger blood-vessels. Changes in the blood, in its lymph, in the nerve action and function of the part. The symptoms—pain, heat, swelling and redness—simply attend upon these changes. Taking the whole disease of dental caries, I think there are pathological processes that take place.

It is not especially necessary to discuss the formation of acids and ferments in the mouth. I think there is a degree of inflammation preceding. The disease, dental caries, and all the phases of the acid theory, bacteria, bacilli, micrococci, sprosspilz, etc., and all other facts concerning dental caries, are but parts of one general disease, we each seeing but one phase.

DR. J. TAFT.—In the incipency of dental decay, pathological processes take place, but not after devitalization.

DR. WRIGHT.—Cannot these pathological changes be only one part or phase of the whole question of dental caries?

DR. J. TAFT.—It is wise to discriminate and not become con-

fused when considering this matter. We cannot say with truth that a dead man is in a pathological condition.

DR. WRIGHT.—Then, Dr. Taft, you don't regard decay of the teeth a disease?

DR. J. TAFT.—I do not. Of course, caries is preceded by disease. As the process goes on, there is a line of demarcation between dead and living. In the dead part, there can be no disease, while there may be in the living, and while the process goes on, the line of demarcation is moving onward.

DR. WRIGHT.—By your definition, caries is not a disease, but a result of disease.

DR. J. TAFT.—It follows. We have failed in this matter, and have groped along all the while. We give too many names for the same thing.

DR. WRIGHT.—I at first agreed with Dr. Taft, but now I disagree. He at first said caries was a disease, and afterwards said it was but a result of disease.

DR. J. TAFT.—The only difference between us is the shading of the definition.

DR. H. A. SMITH.—Dr. Taft says death of a portion promotes decay by the putrefaction of that part furnishing solvents. Any change that takes place in a tissue is pathological.\* Does the putrefaction of the organic matter of the tooth produce sufficient acid to destroy all the inorganic part of the tooth?

Though I have been brought up on the acid theory, and still cling to it, yet I do not regard it as thoroughly established, and believe both it and the bacteria theory to be hypothetical.

DR. WRIGHT.—I think that all these processes are but parts of this whole question of disease, and until we take a comprehensive view of it and include them all, we shall still be at sea and no further ahead than we were forty years ago.

The Association granted Dr. J. A. Robinson sufficient time to read a paper. Dr. Porre also read a paper. Eleven o'clock having arrived, (it having been made a special order of the business,) Dr. W. S. How, of Philadelphia, made a detailed demonstration of his method of mounting artificial crowns upon roots in the mouth.

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\* Prof. S. doubtless means living tissue.—ED. JOURNAL.

## AFTERNOON SESSION.

The Association was called to order, Pres. Clyde in the chair. The minutes of the morning session were read and approved. On motion of Dr. J. Taft, a committee of three was appointed to draft a suitable memorial upon the death of Dr. W. H. Goddard, of Louisville, and old and early member of this Society. The chair appointed on this committee, Drs. J. Taft, J. S. Cassidy, R. J. Porre. The treasurer now made his report, which was referred to an auditing committee.

The discussion of the second subject on the programme was resumed.

DR. J. TAFT.—I think it is a good idea to determine at what period or periods caries is most likely to occur. During any condition of enfeeblement, the secretions of the mouth become vitiated, and the teeth are in consequence more prone to decay. During the periods of gestation and lactation, they are less perfectly nourished, and necessarily become more susceptible to the influence of decaying agents. The largest proportion of decay of the teeth takes place at night, during the hours of rest. Throughout the day the secretions are most abundant, and the parts about the teeth are kept in motion in the acts of speaking and masticating. At night the organs are quiet, and the secretions in abeyance. Many persons acquire the habit of sleeping with the mouth open—the passing of air through it dries up the moisture, agglutinates the mucus, thus making the opportunity more favorable for putrefaction. In the morning there will be found in the mouth a “bad taste,” this being caused by the vitiation of the secretions. When kept closed during the night, these ill effects do not appear, and the mouth will taste fresh and clean. The agglutination of the mucus and its subsequent decomposition are the cause of the offensive taste and breath, to say nothing of the deleterious results to the teeth. I have given this subject some attention for some years past. Everything being equal, the mouth when kept closed will be in a better condition than when it is habitually kept open.

DR. OSMOND.—The inference then is, that those who snore must of necessity have the mouth open, and in consequence have bad teeth. The ages between thirteen and twenty years, is the period of greatest ravages by decay, especially in those whose

growth has been rapid. With girls, the most critical period is during the establishment of menstruation, and more so if rapid growth occurs at the same time.

DR. PORRE.—I am nothing, if not practical. I care nothing for theory. The air is loaded with bacteria and other bugs; and their injurious effects in the mouth can be neutralized by cleansing the mouth at night with an antiseptic.

DR. HOW.—A little close observation will show the gentle snoring to be the hum of the bacteria, and the boisterous form to be the roar of the leptothrix.

A motion was made to pass the subject and take up the third, which was done. Dr. G. W. Smith favored the members with that half of his paper which bore on *this* subject.

DR. SAGE thinks that dentists have too much neglected the free use of the lancet during the incipient stage of inflammation in the alveolus. At a later period it will not avail, owing to the morbid deposits that take place. I do not think an alveolar abscess is ever thoroughly cured, and I base my statement upon the surgical axiom that a part once inflamed is always ever after more likely to have a recurrence of the inflammation.

DR. H. A. SMITH.—Dr. Chas. Tones, in a paper recently published in the *New England Dental Journal*, advocates the filling of the pulp cavity with some antiseptic matter, so that when the canal is opened with a broach, no micro-organisms in the atmosphere can find access to the socket through the root. I think that we should always avoid introducing septic matter through the apex of the root, and endeavor, if possible, to exclude micro-organisms and the production of putrefaction. Again, if the bacteria theory is true, the putrefaction in a tooth devitalized by a blow can receive the bacteria only through the circulatory system.

DR. J. TAFT.—While there is some truth in the theories that have been canvassed to-day, there is a disposition to go too far. Some years ago Virchow promulgated his theory of cellular pathology. Things have so changed since, that he has been obliged to revise and modify his former view. His new one is entirely different. When a tooth is devitalized, the tissue is given up to simply chemical changes, and in these organisms have but little play.

DR. WRIGHT.—We, as dentists, have but two diseases to treat,



viz: inflammation and dental caries. These are the cause of all our contests, discussions and disagreements.

THIRD DAY—MORNING SESSION.

The Association met promptly and was called to order by President Clyde. The minutes of the previous session were read, and there being no objections, they stood approved. A motion was carried to pass the third subject, and the fourth subject, "Prosthetic Dentistry; Restoration of Features and Expression, How best Accomplished," was announced.

DR. BERRY.—Prosthetic dentistry, or *mechanical* dentistry, as we have been in the habit of calling it many years, has received but little attention in this Society for several years past. The restoration of features, etc., is best accomplished by restoring, as far as may be, the order of things as they existed before the loss of the dental organs. Nature usually does her work well, and we cannot do better than model our work after her design. The secret of John Allen's success as a prosthetic dentist is his habit of carefully studying each case that comes under his notice. By learning them thoroughly he has been enabled to restore feature and contour with great success.

DR. WRIGHT.—If I should wish to restore the expression of those around me here that are wearing artificial teeth, I should certainly remove their plates. [Laughter.]

Prosthetic dentistry has been dragged in the dust by the introduction and use of block teeth. In the old time, when ivory, the teeth of dead subjects, sheep, calves, etc., were used to replace the human teeth, the effect was certainly more artistic than that now accomplished by the use of block teeth.

DR. KEMPTON.—My weak point is prosthetic dentistry. I find that it is next to impossible to get teeth of the proper color and shading.

DR. WRIGHT.—In block teeth the color is too uniform and "set" throughout, such as is not seen in the natural organs. It is much better to grind off the enamel of the machine teeth, and modify the color by staining and re-enameling.

DR. BERRY.—Some years ago there was a use for the teeth that were extracted from the mouths of dead subjects. They were riveted on plates and mounted on pivots on the roots.

DR. OSMOND.—Artificial teeth, when polished instead of

enameled, acquire that peculiar bony surface, which is far more natural than the staring gloss of enamel.

DR. PORRE.—Who is responsible for the manufacture of machine teeth?

DR. WRIGHT.—The dentists.

DR. PORRE.—Dentists should send models and have the teeth made to suit the case.

DR. H. A. SMITH.—Dr. How exhibited yesterday a number sets of rejected teeth. These were irregular in many slight ways, and some of the irregularities were very natural looking indeed. But these sets do not sell well, as most dentists prefer to have them made as regular and uniform as possible. We don't attempt to restore features, though we may know how, neither do we expend upon the case sufficient time to study all its varieties and peculiarities of contour, expression, etc. This, I imagine, is because we work for a uniform fee and gauge the work accordingly. We ourselves are to blame for our poor attempts at prosthetic dentistry, and should not shift the blame upon the manufacturer.

DR. WRIGHT.—It is as much the fault of the manufacturer as it is of the dentist.

DR. G. W. KEELY.—The restoration of contour is an exceedingly important thing, and right here let me say that the profession is more indebted to John Allen than to any other man. He first made use of plumpers to restore the contour of the face. Continuous gum offers great facility for the restoration of contour; it may also be done with rubber, but there can be no comparison between the kind and quality of the work. The dentist who does not consider the restoration of contour does not do his duty. The pivot teeth of old Dr. Stockton were better and stronger than any that have ever been made since.

On motion, the subject was passed, and the Association proceeded to the election of officers, with the following result:

President.—C. M. WRIGHT, Cincinnati.

First Vice-President.—H. A. BEAMER, Cynthiana, Ky.

Second Vice-President.—C. I. KEELY, Hamilton, O.

Recording Secretary.—W. H. CAMERON, Cincinnati.

Treasurer.—F. A. HUNTER, Cincinnati.

Corresponding Secretary.—C. R. CALLAHAN, Hillsborough, O.

The President elect was conducted to the chair by Drs. F. A. Hunter and C. I. Keely, and upon assuming his duties, made a

few appropriate remarks. On motion of Dr. Betty, the Association passed a vote of thanks to the retiring President and his assistants. Dr. J. Taft, Chairman of Committee on Memorial, made the following report :

IN MEMORY.

Within the last week, one who was a prominent member of the profession, and from the time of its organization a member of this Society, viz : Dr. William H. Goddard, of Louisville, Ky., has passed into rest. He closed his long and useful life on Sunday, March 4th, 1883. Like a grand old oak, he had sturdily braved the tempests and chilling blasts of life's varied experiences for nearly four score years. But at last he has fallen, having reached the greatest eminence in his chosen profession for which he labored with such energy and efficiency in this western country. Faithful, true and devoted in all his trusts and obligations ; genial, courteous and loyal in his friendships, his excellence and worth of professional and private character were acknowledged by all.

For more than fifty years he devoted himself to the profession, in which he was an untiring, sincere and painstaking worker—always at the front with those who were seeking advancement, receiving and contributing full measure in return—modest and unpretending in his relations with his professional brethren, yet manly in asserting his opinions, and bold and unswerving in defending his convictions of the right, honors sought him, as they always should the deserving, and rested gracefully on his head for fifteen years in re-election to the office of Treasurer of the American Dental Association. At the last meeting of that Society in this city, he was elected almost unanimously upon the first ballot, its chief officer—President—thus fittingly crowning his life with the highest honor in the gift of the profession.

He was one of nature's noblemen with purposes ever true and pure. As a friend, a father, and a husband he was a model worthy of all imitation. It is with great gratification that we call to memory and put upon record a few of the characteristics of our dear brother. To the bereaved family we extend our warmest sympathy in this hour of sore trouble.

Your committee recommend that a copy of this statement be entered upon a memorial page of the proceedings of this body,

and that a copy in appropriate form be sent to the family. Also that a copy be sent to each of the dental journals of the country.

J. TAFT,

J. S. CASSIDY.

R. J. PORRE.

DR. H. A. SMITH moved that the report be accepted. Dr. Betty moved an amendment to adopt by a rising vote. The amendment was accepted by Dr. Smith, and on the question being put, the members rose to their feet in silence. Drs. G. W. Keely, A. Berry, H. A. Smith and J. Taft all made obituary remarks.

The President announced the following standing committees for the ensuing year :

Executive.—J. TAFT, E. G. BETTY and M. H. FLETCHER.

Membership.—F. A. HUNTER, C. I. KEELY and A. G. ROSE.

Publication.—E. G. BETTY, J. M. CLYDE and O. N. HEISE.

Ethics.—G. W. KEELY, H. A. SMITH and J. G. CAMERON.

After the transaction of miscellaneous business, the Association adjourned to meet the first Wednesday in March, 1884.

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## “ANTI-EXTRACTION.”

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### DISCUSSION.

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[See Dr. Morrison's Article, in May Number.]

DR. J. J. R. PATRICK: The paper is solid gold all the way through, and I favor all the essayist has said. As far as legislation is concerned, I think these matters are between the patient and his dentist, and legislation cannot control them. I am in favor especially of crowning all roots: but many people are not able to pay for fine operations in crowning, and we must of necessity extract. I often find intelligent people who wish me to extract good teeth, but I invariably refuse. If the “vast majority” of people, who neglect their teeth, would keep their mouths half as clean as they do their faces, the dental profession would soon have little to do. The practice of medicine consists largely in arrant quackery; and my opinion is, that the dentists compare very favorably with any other profession.



DR. W. N. CONRAD: Dr. Morrison's paper to-night is the best I have ever heard him read, barring a few things such as "never extract teeth until you can remove them with the thumb and finger." Common sense must be used in all such things. All know that teeth *must* be extracted in an ordinary practice. Sometimes teeth must be extracted as soon as erupted. If we absolutely refuse to extract teeth we are not doing our whole duty, and we must sometimes yield to our patients when we would prefer not.

DR. HOMER JUDD: I do not agree with Dr. Conrad with regard to yielding to our patients' wishes, when they insist upon extraction. I have always made it a matter of conscience, and have always positively refused to yield to the demands of such patients. When the gentleman grows older he will probably stand where I do now. I am in favor of cutting loose from the medical men. I do not think they do us much good; and as far as "recognition" is concerned, they will never recognize us without our holding the degree of M. D. I think of all people, the physicians, as a class, are the most ignorant of things pertaining to dentistry.

DR. N. C. STARK thought the medical men could, and *did* do the dentists a great deal of good, and recalled two or three cases in his practice in support of his view of the matter.

DR. CONRAD explained to Dr. Judd that he never extracted a tooth against his judgment, but he considered the position of his patient with regard to wealth, position, education on dental subjects, and other things of such kind, in forming his judgment as to each particular case. With regard to the age question, he thought that young men were better qualified to exercise their judgments than those who had grown old and had acquired fixed habits and opinions.

DR. GEORGE P. HOLMES: I agree, in the main, with the paper, but I certainly think that teeth so loose as to be extracted by the fingers would soon extract themselves. Anyhow, I extract fewer teeth, year by year, and fill and crown where even one root is gone. *Nearly* all roots can be crowned. I am sometimes influenced by my patients' wishes, where the patient is very poor, or in extreme cases of decay, or chronic and incurable cases of alveolar abscess.

DR. H. J. McKELLOPS: "Dr. Morrison, what do you do about the teeth you extract *after* replanting?"

DR. MORRISON: "I let the patient do that himself."

DR. McKELLOPS: I have had to extract teeth after having made every effort possible to treat and cure them; and I claim to know something about dentistry as well as Dr. Morrison. Some teeth *cannot* be filled. We *cannot* fill and crown all roots. Some very loose ones can be treated and cured, and others cannot. The average medical man who comes into the dental profession, comes because he knows nothing about either, and because he could not make a living in the practice of medicine. The bold assertion of some men that they *never* extract teeth is pretty big talk.

DR. PATRICK said he did not mean to say he *never* extracted teeth. He was on record in a paper he read before the Illinois State Association. Very few abscessed wisdom teeth ought to be saved,—wisdom teeth out of position ought to be extracted, and sometimes it was necessary to take out the second molar in order to do it. You could not "cut" them out without injuring the ramus of the jaw.

DR. W. H. EAMES: The general proposition advanced in the paper we have just listened to, that many firm teeth and roots are extracted daily that could and should be saved, is one which we can all accept as true. But the Doctor is a little "previous" in asserting that no tooth or root should be extracted which is too firmly set to be removed with the thumb and fingers. His pictures, too, are a little overdrawn. To liken the dentist who extracts a firm tooth that he may replace it with an artificial one, to the artificial leg or arm manufacturer, who would advise the amputation of a leg or an arm, that he might supply the loss with an artificial substitute, or that these artificial substitutes bear the same relation in the score of usefulness, is not putting the question fairly. I believe, from actual observation and personal experience, that good dental substitutes come much nearer supplying the loss of the natural organs than the best artificial leg or arm. The office of the dentist should be to save teeth, not to extract them; and the time may come, that happy millennium for the dentist and his patients, when the extraction of teeth, and the manufacture of artificial ones will form no part of the dentist's calling; but we shall not probably live to see it. That we are slowly but gradually approaching that goal

is evident to any one who contrasts what was done by the profession in the way of saving teeth and roots twenty-five years past, with what is being done to-day, with the aid of new appliances and other facilities for properly caring for these important organs. And yet there are many firm teeth and roots that must be sacrificed to the forceps, viz.: In cases of irregularity—to correct, or as a means of prevention. I am aware that some members of the profession will not accept this proposition. Nevertheless, I believe it to be correct practice. The removal of a firm tooth is frequently a necessity, in cases of disease of the associate parts. And again, cases frequently present themselves, when the necessary time and outlay cannot be given to save firm teeth, which, with proper care and attention, might be saved. I do not believe this legislation will do much to correct the evil the doctor complains of, neither do I place much reliance on popular education as generally understood. What we most need is a liberally educated conscientious profession, who, knowing their duty, will invariably do it, regardless of any monetary consideration. And we need, as well, an educated medical profession. I mean from a dental stand-point. A profession possessing more knowledge of the causes of an aching tooth and the remedy than a last year's bird's nest. Give us these, and an enlightened, *refined* community to work upon, and but few—very few teeth will be lost that could be saved. We may then look for the coming of this millennium which some of the gentlemen present have spoken of. When the forceps, and the screw, and other instruments of the old dental inquisition will have passed away, and the prosthetic dentist will have lost his calling. Dr. Morrison cannot justly claim originality for the expression which he makes use of: "I extract no tooth or root that I cannot extract with my thumb and finger." This was the expression of Dr. J. Foster Flagg years ago. In fact the doctor's paper is but an echo of Dr. Flagg's New Departure speech, made before the "American Dental Association," at the meeting held at Niagara in 1878. I did not know, until I heard the doctor read his paper, that he had joined the ranks of the New Departure.

DR. MORRISON: (In reply.) I have not joined the New Departure, but I advocate the saving of all firm teeth and roots.

DR. MORRISON wanted to defend his paper. Only a few years ago, he said, the exposure of a pulp in excavating was considered

good cause for extraction—nearly all wisdom teeth were extracted. In the so-called “preparation of the mouth,” where one or two teeth needed extraction, they were often all taken out. After the process of root-filling was introduced, if a tooth hurt after the roots were filled, it was at once extracted. All these things were wrong, and were not done now. I am carrying the fight still farther; and in the views of this, future generations will find the true gospel of dentistry. If a tooth is aching, I always relieve the pain, and then clean out and fill with phosphate. This I do free of charge rather than extract.

DR. A. H. FULLER said such relief was merely temporary, and only postponed, for a short time, the extraction of the tooth.

DR. McKELLOPS: These things are not new nor original with Dr. Morrison. They have been growing up in the profession for years and years. We are all improving, and all trying to improve more and more. He didn't take much stock in these little dental gods, who could do anything and never fail.

DR. N. C. STARK: There will always be disease, and children will inherit it, and there will always be bad teeth, and teeth will always be extracted.

DR. J. B. NEWBY: I do not agree with Dr. Morrison's idea that the time will come when teeth will not have to be extracted. Sometimes, but not often, we find cases in which the false teeth are better and more useful than the natural ones were. I think, in speaking of his paper as the “gospel of the future,” Dr. Morrison has passed the bounds of reason.

A prominent and reliable dentist, who engaged in the above discussion, said to me privately, that he had intended, but forgot, at the time, to state that Morrison's ideas, with regard to extraction, was an outgrowth of the “New Departure,” Prof. J. Foster Flagg, having advanced it at a meeting of the National Association at Niagara Falls, in, I believe, 1876, and the very words that “a tooth should not be extracted until it could be done with the fingers.”

JAMES W. WHIPPLE,

Rec. Secretary.

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### THE MINNEAPOLIS DENTAL SOCIETY.

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THIS young society has successfully completed the first half year of its existence, and for the ensuing half year has elected the following officers: Dr. T. A. Smith, President; Dr. W. A.



Spaulding, Vice-President; Dr. E. F. Clark, Secretary, and Dr. W. A. Murray, Treasurer.

This society is incorporated under the laws of the State, and holds its meetings on the third Wednesday of each month, and the members are delighted with the success of the experiment for the first six months.

We are indebted to Dr. J. H. Martindale, its first Secretary, for the above information, and we hope he will "not weary in well-doing," but let us hear from the society again and again. If good papers are read at these meetings the JOURNAL can send them broadcast.

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### IN MEMORIAM.

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At a meeting of the St. Louis Dental Society, held at the rooms, No. 204, North Fifth street, on Tuesday, May 1st, 1883, the following preamble and resolutions on the death of Dr. W. A. Cornelius, were adopted:

WHEREAS, Death has removed from our midst Dr. W. A. Cornelius, a man eminent for his sterling worth, integrity and energy, and one of the oldest members of this society, therefore,

*Resolved* That we sympathize with his family and friends in their affliction.

*Resolved*, That in his death his family has lost a loving husband and father, our profession a worthy member, and the community a good citizen.

*Resolved*, That a copy of these resolutions be sent to his family and to the dental journals for publication.

W. H. EAMES,

ISAIAH FORBES,

WM. N. MORRISON,

*Committee.*

True copy:

JAMES W. WHIPPLE, *Recording Secretary.*

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### INDIANA STATE DENTAL ASSOCIATION.

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The twenty-fifth anniversary of the Indiana State Dental Association will be held this year in Indianapolis, in the parlors of the new Dennison House, beginning Tuesday, June 26th, at 11 A. M.

As this is a quarter centennial, the list of subjects used in 1858, when this Association was organized, will be used again in June, viz : "1st, Best means of preserving the teeth ; 2d, Treatment of exposed nerves ; 3d, The best means to correct irregularity of the teeth ; 4th, Mechanical Dentistry ; 5th, Miscellaneous. Those attending this meeting should stop at the Dennison House, where they will be accomodated at \$2.50 per day. The various dealers and manufacturers will exhibit in the Dennison. This being a quarter centennial occasion, will be closed with a *jubilee and banquet*.  
J. E. CRAVENS, President.

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### ALABAMA DENTAL ASSOCIATION.

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THE fifteenth annual meeting of the Alabama Dental Association was held in Montgomery, Alabama, on the 10th, 11th, and 12th of April, 1883, at McDonald's Opera House. Dr. J. C. Johnston, President, in the chair. The following officers were elected for 1883 :

Dr. E. S. Chisholm, President.

Dr. R. U. DuBois, First Vice-President.

Dr. W. R. McWilliams, Second Vice-President.

Dr. E. Wagner, Secretary.

Dr. G. M. Rousseau, Treasurer.

Drs. E. S. Chisholm, E. Wagner, S. Rambo, W. D. Dunlap and A. Eubank, Executive Committee.

Drs. W. R. McWilliams, A. Eubank, J. C. Johnston, W. B. Stewart, and J. G. McAuley, State Board of Dental Examiners.

E. WAGNER, *Secretary*.

MONTGOMERY, ALABAMA.

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### THE ASSOCIATION OF AMERICAN MEDICAL EDITORS.

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THIS Association will meet in Cleveland, Ohio, simultaneously with the meeting of the American Medical Association, on the 5th and 6th of June, 1883. A very interesting programme is provided, not the least interesting being the address of the President, Dr. N. S. Davis, of Chicago, Illinois, on "*The Present Status and Tendencies of the Medical Profession and Medical Journalism*."

"The meetings will be held in the intervals between the meetings of the sections of the American Medical Association, and the social entertainments of the evening."

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### SOUTHERN AND GEORGIA SOCIETIES.

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The date of the meeting of the above Societies has been changed from the second Tuesday in August to the fifth Tuesday in July, at Atlanta.

J. P. HOLMES, Cor. Secretary.

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### Editor's Specials.

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"Write the Vision and make it plain."

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### JUST SO—WELL, NEARLY SO.

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IN the transactions of the Odontological Society of Great Britain, as reported in the medical press, Mr. Henry Sewill says: "There could be no doubt that caries itself was wholly due to the action on the teeth of the acid products of decomposition formed in the mouth, which permeated the porous enamel and acted on the dentine. It had also been lately shown that the progress of the disease was assisted by the proliferation of micro-organisms in the canals of the dentine, these organisms having themselves the power of producing an acid secretion. It was not, in any sense a constitutional, but a purely local disease."

After making due allowance for the mistakes and misrepresentations incident to reporting, these remarks show that Mr. S. is not far from the kingdom of truth. We are not ready to state so positively that these micro-organisms are capable in themselves, of producing an acid *secretion*. Some have guessed that they develop an acid, and we have asked what acid. If they are organic at all, of course acids will result from their decomposition or putrefaction, but to tell us the acid is a *secretion*, direct from the living organs of the little bugs and bushes, is a step beyond the present demonstrations of science.

In the main, the remarks are very clear and truthful. In a special some time ago, we referred to a little boy watching the maggots eating the carcass of his pet dog, and remarking that, it was not strange that he had died, having all these worms in him. The dog's carcass was disposed of very much more rapidly by the maggots coming to the aid of the putrefactive process. And the appearance of the decaying carcass was much modified by the influence of the little worms. On the same principle the character and appearance of the decay in the tooth are much modified by the action of the micro-organisms, and the process of disintegration is doubtless accelerated by them, nevertheless, their influence is nothing until the decay has begun. Every now and then we receive a letter asking if it will not do to compromise on a combination of the chemical and the germ theories. This is similar to the suggestion of years ago, when some one would find that constitutional conditions predisposed to caries, he would tell us that it was not chemical action alone that caused caries, but the chemico-vital theory was the true one, as if any one ever thought of ignoring vitality as concerned in the process. And now we know of no observer who has not for years, recognized the influence of germs. But that these germs are capable of attacking and devouring well developed, sound hard teeth, is not recognized by any that we know who are capable of making both a chemical and pathological investigation, and who have given the subject careful attention. A certain Yankee tells us we have shown the germs, and who denies; but what are they doing? Not devouring sound, properly developed tooth tissue. And the best friend of the showman, in this case, regards him as neither an original investigator nor capable of being one on this subject. It is amusing to see men who can barely read look through a glass, and immediately set themselves up as authority in microscopy and pathology; and it is more amusing to see them recognized to the full extent of their claims, by the toadies who are on the watch for something marvellous. And what if the germs have been shown? The little boy showed the maggots, as well, not killing the dog, but devouring dog-tissue after it was dead.

The advocates of the chemical theory of decay have never thought of ignoring the influences of vitality and of organic textures. But it seems very strange that after so long a time, (short, though, in comparison with the time the other theory



was universally recognized)—strange that even yet, so few understand the principles of the chemical theory of decay. So many of them talk so indefinitely and in such a general way about the acids concerned in the process, as if even tannic acid were as likely to start caries as any other, that it is not strange that students are mystified, while those opposed to the theory scarcely know what they have to combat.

But the advocates of the germ theory are entangled amid still greater confusion, and are still harder to understand. "Mr. Jones," said his friend, "your clock doesn't keep good time." "It is an excellent time-keeper when you understand it," replied Mr. Jones. "When the hands point to twelve, the clock strikes three; and that means that it lacks just twenty minutes of seven." Perhaps the germ theory clock keeps good time when we understand its conditions.

In a paper lately read by Prof. Frank Abbott, the chemical theory of decay is well set forth, except that he might have been more definite as to the special acids concerned in the process; but as a whole, the paper is so much in advance of what is ordinarily written on this subject that it is refreshing to read it. We lack room now, or we would give it, with due credit, to the readers of the JOURNAL. Nothing in the way of scientific investigation pleases us more than the researches in reference to this question. It is the all-important one in dental science. It is not complementary to medicine and surgery that the most common, by far, of all diseased states, is not yet understood in its etiology and pathology. We must wake up, and stay awake till this question is universally recognized as a *settled* one. Let truth prevail.

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#### A FRAGMENT OF CORRESPONDENCE.

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OUR big-bodied and larger-hearted friend, Dr. J. F. Siddall, like a pulp under his hickory pin, has got into "a tight place." The members of the State Society will be sorry to learn that he has been afflicted most of the time since our December meeting. And they will be glad to know, as we are glad to assure them, that the prospect is good for his complete restoration to health. Most of the communication he sent is personal and private; but we will draw a little on it to show the reader how well employed he

is. His first words are, "On my back, reading the *JOURNAL*"—and, aside from the Holy Bible, what better reading could he find? After telling us that he is thinking of us and our invalid chair, he adds that, "If you care to, you may put in the *JOURNAL* what I have written about the hickory pin," and this we take pleasure in doing, as we felt sure we had not succeeded in setting forth his idea. What he has written is as follows:

"I had to laugh at the way you reported my hickory pin business. I have, during the last dozen or more years, filled hundreds of roots of teeth, of a certain class, with hard wood, and, occasionally, have driven a pin into a root when a tooth was broken off, in extracting, after first taking the pulp out with a broach, stopping all pain on the spot. As to driving in the pin without first removing the pulp, which I said might be done, when a tooth was broken off, perhaps I put it a little too strong, as I wanted to wake up some of the brethren, and have some fun. I confess, in such cases, I have always had my barbed broach in first, and have had out part of the pulp. Yet I do believe, if the pin were driven well in, it would cut off all circulation, and relieve the pain if the pulp were not taken out."

Hard wood has long been used for stopping pulp canals; but we think the practice is not increasing. But the members of the State Society will rejoice to learn that Dr. S. gives the pulp a chance to be killed before it is murdered.

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#### "EFFECTS AND CAUSES."

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The article in the present number entitled as above, already has a history. While it was still in a state of preparation, its author wrote us to know if we would like to have it, as he greatly preferred to have it in the *JOURNAL*, as he thought its sentiments were more appropriate to it than to others. We replied that we would like to have it provided, of course, that it would meet with editorial approval on inspection. Afterward the author wrote that he wished to read it at a meeting before sending it to us. Of course we were willing. It was read at the annual meeting of the Michigan State Society in Detroit, and our readers may wonder at its late appearance in the *JOURNAL*. This is thus explained: Another editor wanted it. The author told him it was already disposed of; then he wished to be granted a

joint use of it. The author wrote us in substance that he regarded the document as ours, but asked if we were willing for the other periodical to have joint use of it. We consented; but, as the author said a second time, "understand it remains your paper," we never thought but we would get the original copy. Not so, however; but the other editor got it, and matters went as usual in such cases. Issuing his journal near the last of the month, instead of the first, he failed to send us a copy till entirely too late to have it appear in the JOURNAL the same month. We got the copy of the article, in page proof, the same hour that we got the revise proofs of the entire forty-eight pages of the May number of the JOURNAL. We could not mutilate the forms and insert the article, and be out on time. So we rejected the article entirely; but after second thought, taking into consideration the earnestness of the author, in spite of the heavy hand of time, and on the advice of our chief advisor, we lay the paper before our readers, apparently a month behind a rival periodical, which obtained it by importunity, having the advantages of the presence of its editor at the meeting, while we were necessarily absent. No harm intended, but we didn't like it, and don't.

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### "THEORISTS AND DREAMERS."

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THE very readable valedictory address of Prof. Buffett, found in last number of the JOURNAL, contains the following:

"The seventh and last act, which is the closing scene of life, we must all play sooner or later. Other acts may, perchance, be dropped out, but not so with this; the laws of death are fixed,—a separation of mind from body must take place. One is resolved into the elements from which it came, to be again and again united into other forms of animate and inanimate matter. The other passes to an existence of which we know but little. Theorists and dreamers attempt the solution, but their weakness and insufficiency are made more and more painfully manifest at each attempt."

Fortunately we are not left to theorists and dreamers to gain the little knowledge we possess in reference to the mysterious existence in the future of that which is not resolved into its constituent elements. Dreams have no place here, and even Science must stand aside. A blacksmith repairing a watch is congruously

employed, compared with Science prying into problems pertaining purely to revelation. We read of the

“Undiscovered country, from whose bourn no traveler returns.”

But at least three, and probably four have returned from it, and two of them have imparted to us much valuable information in reference to it; and fortunately they are neither theorists nor dreamers, but are every way reliable. These two are the man of Nazareth who died and rose again, and the angel of the Revelation, who told to John what John has told us, while the other two are the grand old prophets Moses and Elijah, one of whom may have been the revelator.

But these have not told us all that we wish to know, nor all we need to know; hence it is almost self-evident that, needing a revelation, our Father, who giveth liberally, would give us one. Here, and only here, are we to look for the information needed in this direction. We are quite beyond the jurisdiction of Science, and need not try to apply it.

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## DISCUSSIONS.

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IN reading the discussions in this number in reference to Dr. Morrison's paper, the reader may find it a good plan to turn back to the preceding number and re-read the article. We tried to get the paper and the remarks thereon into the same number, but found it inconvenient to do so.

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## EDITORIAL CHANGE.

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THE *Independent Practitioner* again loses its medical editor. If changes are heartsome, this journal should feel quite jolly. Still we are sorry that this change has been found necessary, yet we hope it will not injure the interests of the *Practitioner*. It has survived and prospered under previous changes, and we hope this one will follow with like results.

David Garrick, the actor, is said to have been fastidious if not fickle in his friendships, and of him Oliver Goldsmith says:

“He cast off his friends as a huntsman his pack, for he knew when he pleased he could whistle them back.” If any journal



could whistle back its ex-editors, we presume the *Independent Practitioner* could; for we feel confident that not one of them has left it except in obedience to the force of circumstances, and while still well pleased with their work and the journal. We hope the medical department will have, hereafter, a permanent worker, and we think our friend Barrett can hold the dental division in place. May the *Practitioner* follow former practices, and be as *independent* as ever.

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### A JOURNALISTIC CHANGE.

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THE *Missouri Dental Journal* is taking a new departure. We do not refer to the wild chase after a flag, but, we regret to announce that it no longer will be edited and published by our able and genial friend, Dr. C. W. Spalding. It is a pity that Dr. Spalding's editorial talent is to be lost to the profession. We hope and pray that his ready pen may hereafter point toward the OHIO JOURNAL, where he will be ever welcome as a contributor.

The change in the *Missouri Journal* is radical. It is to be owned, edited and published at Kansas City, Mo. That it will be as good, as readable, as genial, as hightoned, under the new as under the old management, is as good as we can ask for it. While saddened at the thought of parting with Dr. S., we cordially welcome the new workers into the ranks of dental journalism.

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### AN EXPLANATION.

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IN making up the present number we have done an unusual thing. An article is published of whose authorship we are ignorant. "Hints to Beginners, by Querulous," is the one referred to. We believe the author's card was enclosed, but that it escaped on opening the paper. We were so ill that we accepted help in examining our mail, and a stray card had been noticed without a thought of where it came from, and it was allowed to find its way to the waste paper. All this before the article was examined and the lack of the author's name noticed. We wish to use "Querulous" again, if he is not too querulous. Will he please tell us by postal card who he is?

COLLEGIATE DEPARTMENT OF THE CHICAGO  
DENTAL INFIRMARY.

THE first annual announcement of this new dental college is before the profession.

Its faculty is composed of familiar names: W. W. Allport, George H. Cushing, L. P. Haskell. It has a large and able corps of lecturers, as well as clinical instructors, assistants, etc. With such force behind it ought to succeed. It proposes to confer the dental degree only on those already medically educated. This seems to be its special calling. Otherwise we presume it will be somewhat similar to colleges already in active life.

## EXPLANATION.

SOME have thought that our special on "Our Glorious Profession" was suggested by the contribution entitled "Babes in the Woods," but it was written a month in advance of the "Babes."

## MICROSCOPIC.

THE *New England Journal* is delighted with its own humor. We might admire it too, had we the same facilities for examining it. Its study of germs prepares it for observing its own witty sparkles. A few hundred diameters with a good instrument, ought to render them visible.

But the *New England Journal* doesn't like tracks, even though an important science has been developed solely by a study of them. Its dislike is said to have resulted from long and laborious research in its youthful days, trying to determine "whether the snake that made the track was going south or coming back."

Verily the *New England Journal* force is not composed of the seven men referred to by Solomon, for they could "render a reason," while these can barely gasp, "Well! well!"

## In Memoriam.

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At a special meeting of the St. Louis Dental Society, held on May 5, 1883, the following resolutions were adopted:

WHEREAS, The St. Louis Dental Society has been pained by the announcement of the death of another of its members, Dr. Alex. Dienst, who has been cut off from our number in the prime of his manhood and the fullness of his professional usefulness; therefore,

*Resolved*, That this society is moved with feelings of deep regret at its untimely loss, and that in the death of Dr. Dienst our profession has lost a bright example, a wise counselor, and a true friend, and the public the services of a worthy and skillful dentist.

*Resolved*, That we deeply sympathize with his family and friends in their sore bereavement, and tender them our heartfelt condolence.

*Resolved*, That we attend the funeral of our dead brother in a body; and,

*Resolved*, That a copy of these resolutions be sent to the family of deceased, and to the daily papers and the dental journals for publication.

M. C. McNAMARA, }  
 WM. F. HERMANN, } Committee  
 JAS. W. WHIPPLE, }

A true copy:

JAMES W. WHIPPLE, Recording Secretary.

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## ENLARGED.

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THE reader will notice that this issue contains some eight pages more than usual of reading matter. As the publishers have promised an average of fifty pages to a number, it is found more convenient to make the ordinary size forty-eight pages, which is just three forms. Issuing nine numbers of forty-eight pages makes a falling of eighteen pages below an average of fifty; but, by adding a half form of eight pages three times a year, these eighteen are made up, so that a bound volume of the JOURNAL makes a nice book of six hundred pages. We prefer to bind at least one advertising sheet with each volume, as in a few years it will afford very satisfactory historical reading.

OHIO  
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Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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ALCOHOL A NARCOTIC.

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BY H. R. M'CLELLAN, M. D.

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[Read before the Xenia Academy of Medicine.]

MR. PRESIDENT: I well know that in presenting my views on this subject, Alcohol, I shall come in conflict with high authority and long-established opinions; nevertheless, if these disagree with me, so much the worse for them; for I expect to establish the truthfulness of my position without them.

My first proposition is that alcohol is not a stimulant, but I will classify it as a *narcotic*. It will be necessary then, to state what a true stimulant is, and then show what a narcotic is. Dunglison defines a stimulant thus: “From Latin, *stimulare*, to goad. A medicine that has the power of exciting the organic action of the different systems of the economy.” I define a stimulant medicine to be one that exalts nervous force, and thereby invigorates the circulation, increasing the force and frequency of the pulse, but does not exert any marked influence over the intellect-



ual part of the brain, but stimulates the organic, or merely the animal functions of the brain and sympathetic nerve throughout the system.

Narcotics, on the other hand, while they *may*, at first accelerate the pulse, do not increase its force; and, unlike stimulants, they produce a marked change upon the mind, exciting, confusing or lulling it. In other words, stimulants do not affect the mental phenomena, while narcotics always do. Again, stimulants in their action, are seldom so violent as to be succeeded by much, if any, reaction; but such is not the case in the action of alcohol. It may, as has been stated, produce a temporary acceleration of the pulse, and may, for the time, enliven the mental functions, yet its depressing influence over the nerve force, mind, and intellectual faculties, is sufficiently well marked to characterize it as a *narcotic agent*. The impairment of the intellectual faculties, of volition and sensation, and the depressing and paralyzing influence over the nerve force, constitute the leading phenomena in the action of alcohol, and plainly show the characteristic difference between it and a true stimulant. Now, it is the leading phenomena exhibited in the action of any therapeutic agent, and not the transient or evanescent effect, that should determine both its character and classification. This rule, when applied to alcohol, will place it among the narcotic poisons. I well know that this classification comes in conflict with high and established authority—authors for whose opinions we have the very highest consideration and regard,—authors of this and of other countries, such as Wood, Watson, Flint, Neimeyer, and others,—they all, I know, when referring to alcohol, call it a stimulant. But this classification of alcohol as a stimulant, by those, as well as by many other authors and writers on *materia medica* and therapeutics, we hope now to be able to show is an error.

In order to meet them fairly and squarely, we quote first from Dr. Pereira's *Materia Medica*. He says that alcohol is a stomach stimulant, employed to relieve spasmodic pain, and gives relief in cases of indigestion attended with pain. Also a stimulant and restorative, given in the late stages of fever, and, again, it is a powerful excitant, used to excite the vital powers. Now, Mr. President, and gentlemen, I submit that if alcohol, when administered to the stomach relieves

spasmodic pain, and painful indigestion, that relief is not obtained from its stimulating effects. Surely not, but from its anæsthetic effect, or by its producing a want of sensation in the gastric nerve. If its action were that of a stimulant, would not the sensitive condition of the gastric nerves be increased and the pain and suffering aggravated by its use? Beyond a doubt they would; but this is not found to be the case. And, moreover, instead of alcohol being a powerful excitant of the vital energies, it is utterly incapable of stimulating vital action. And here let us not confound nervous force with vital force. Nervous force may be very much increased, as in high inflammatory fever, without any corresponding increase of vital force. And on the other hand there may be no failure of vital energy, and yet a sudden deficiency of nervous force. Hence, to exalt nervous force is not necessarily to exalt vital force; but that which destroys the latter must at length extinguish the former. When, then, there is a failure of vital energy, no stimulant, much less a narcotic, such as alcohol, will serve to prolong life; for neither is able to generate or communicate fresh vital power. On the other hand, when there is sudden failure of nervous force, stimulant medicines are useful, not by communicating vital energy, but by remedying the want of nervous action, by which want the manifestation of vital energy is subdued.

Again, Pereira remarks that alcohol is a stimulant and restorative in low forms of fever. In this type of disease other portions of the body have become inactive, while the nervous system remains active and sensitive. Indeed, the nervous system is active beyond the endurance of itself, and the result is an increased destructive metamorphosis of the tissues. If, in such a pathological state alcohol is used as a remedial agent, it cannot be for the purpose of a stimulant and restorative effect, as claimed by Pereira, but simply to hold the nerves in abeyance, to suspend or check excessive nervous action, while with nutrients and restoratives we build up the tissues, and restore the lost balance of the functions.

The conclusion, therefore, that we must come to is, that the controlling effects of alcohol over the nervous system in such cases of disease, is entirely due to its narcotic, instead of its stimulating influence.

Again we quote from high authority: Christison and Grif-

fith in their dispensatory say that alcohol is primarily a stimulant, and secondarily a sedative. This is, perhaps, a nearer approach to the truth.

It is proper right here to note, that when alcohol is given in small quantities, what is said to be its stimulating action may be the chief manifestation, and its depressing influence may not take place; and I think that explains its classification as a stimulant by our authors, and by writers in general. But the same statement may be made with reference to opium; but the true effects of alcohol in a large dose, are sufficiently obvious to indicate its place as a medicine. I here quote from Headland: "It is also true that the depressing effect of either alcohol or opium, over the mind and nervous system, is as distinctly marked in the one case as in the other." And I may add further, that even the primary acceleration of the pulse, and the enlivening of the mental faculties which are witnessed in the use of either alcohol or opium are not due to their stimulating action, but are to be attributed to the narcotic effect upon the nerve centres as an irritant poison, and the vital reaction which follows it is not, therefore, stimulation, but it is irritative and vital reaction in the elimination of the poison which increases the frequency of the pulse. And the result is a constant wasting or diminution of the vital strength.

In this connection we will make one more reference to authority: Drs. Wood and Bache say that alcohol is a *powerful diffusible stimulant*, and valuable in states of the system characterized by extreme exhaustion. To this we object. Now, take, for example, anæmia, where there is a failure of the vital forces, and an impoverished condition of the blood. Now, in the exhausted state of the system, which characterizes this disease, it cannot be of any value, because, as before stated, it is utterly incapable of stimulating vital action or improving the condition of the blood, and is powerless in increasing the elements upon which nutrition and life depend. We are also told by the same authors, that "alcohol communicates additional energy to the muscles." To establish this it is necessary to prove first that alcohol is food, capable of being assimilated, and its elements appropriated to the general purpose of the system. But this doctrine is still lacking in proof; and not only so, but evidence elicited by recent search upon this subject, points in the opposite direction, and goes very far to prove that the human system is

utterly incapable of converting alcohol into either muscle or nervous tissue; nor is it in any way capable of adding *real* strength to either. But its influence only renders the individual unconscious of the magnitude of obstacles, instead of imparting strength to overcome them. And drinking beyond a certain limit we lose not only the consciousness of difficulties, but all control of both mind and muscle.—(Anderson.) For instance, if a man decides to commit a crime, he drinks alcoholic spirits, not to stimulate his mind to a better conception of the realities of life, or a more correct perception of the enormity of the crime, but to suppress his sense of right and stupefy his conscience. The disturbance of the mind thus produced is not partial, but of a general character, extending to all the intellectual faculties. It especially effects the brain in such a way as to render that organ more or less incapable of ministering to mental operations. The mind becomes confused and burdened, volition is impaired: the faculty of estimating the ideas of time and space, together with the power of accurate co-ordination of muscular movements is lost; together with reason, prudence and moral sense, which form a thin veil over sensuous nature. The paralysis extending itself to the nerves of motion, leaves the body in a state of complete insensibility. After this there is a regular and progressive extinction of the vital properties of various portions of the nervous system. The last stage may follow if the quantity of absorbed alcohol be considerable. The paralysis then reaches the heart, and stupefaction comes, and *death*, exactly in the same way as with any other narcotic poison, and the *postmortem* appearances in the two cases are the same.

Again, hear what Dr. Carpenter says in his late Physiology, "that extended experience shows that by the use of fermented liquors the capacity for prolonged endurance of mental or bodily labor, and for resisting the extremes of heat and cold, as well as other depressing agencies, is diminished rather than increased by their habitual employment."

And the history of the Arctic explorations corroborates the same view—that is, those who used alcoholic spirits in the hope to keep up the fire in the system, were the very first to suffer and die from the effects of the extreme temperature of the polar regions; but those who relied on milk instead of alcohol, endured the cold without loss of life or limb. Now, what does this teach



us? It proves that those who used alcohol diminished the temperature of the body, and likewise the power of resistance to cold, and *vice versa*.

It being true, then, that alcohol is paralyzing instead of stimulating to the nerve forces, and that its use results in a diminution of temperature of the body, how frequently is this agent misapplied in the treatment of disease, being prescribed as a stimulant under a misapprehension of its true nature and action. Let us take a hypothetical case: The patient is seen lying in a semi-conscious state, countenance blanched, extremities cold, the surface of the body bathed in cold perspiration, pulse fluttering or intermittent, respiration hurried or labored, the patient nearly in a state of collapse. Now, in such a condition we are generally prompted to administer alcohol as a stimulant. Now, gentlemen, I ask in all candor, would the indications of treatment be met by the remedial action of this agent? Would not the patient's peril be increased by its use? I answer, yes! because the effect of it is to paralyze still more the already flagging energies of life, repressing nervous force, and diminishing in a still greater degree, the temperature of the body, thereby throwing an additional obstruction in the way of a hopeful reaction. A *stimulant*, it is true, is indicated in such a state of the system, an agent that will increase nervous force and elevate the temperature of the body in order to secure proper reaction; but I claim you will look in vain for such a result in the administration of alcohol.

Again, is alcohol a food? I answer that it is not in any sense. As a drink it is one of the most powerful antagonists of life. When pure it is a deadly poison. When diluted, of course its pernicious effects are not so rapidly manifested. But it is ever injurious to health; and such would not be the case if it were susceptible of being assimilated as food, as claimed by Prof. Wood and others.

The able and recent researches of Drs. E. Smith, MM. Lallemand, Duray and Perrin, and I might name others, has positively proven that alcohol is not in any case food, that it is neither transformed nor destroyed in the organism. It does not assimilate, but passes out of the stomach in the condition in which it entered it. It is rapidly absorbed, and shows itself in the breath, perspiration, bile, urine, liquids in serous cavities, the liver and the blood, and is found especially abundant in the ven-

tricles of the brain. Thus it is seen that alcohol passes rapidly through the system and out of it again, in the secretions and excretions, as a foreign substance, or accumulates in the serous cavities, having undergone no change whatever. It is still alcohol. A portion of it may be retained in the blood for a time, which it dilutes and weakens.

Not being susceptible of assimilation, it cannot impart any strength or vigor to muscle or nerve; but on the other hand, it impairs the energy of both, as has been already shown.

Prof. Wood (for whom we have high regard), in his Therapeutics, argues that alcohol is food, because those who use wine and malt liquors require less other food, and that the weight of the body is increased thereby; but he fails to note the fact that liquors contain, besides the five to twenty per cent. of alcohol, other ingredients or elements more or less nutrient in their character, such as mucilaginous gummy sugar, etc., which may undergo digestion or transformation, and to an extent serve the purposes of the system; but there is no evidence that the alcohol is in any way assimilated or transformed, or that it in any degree increases the strength or the weight of the body.

But to settle this question, I submit the following as to what food is: Food is that which repairs some waste, or supplies some want of the system. Now we can repair only that which exists in part or in whole, or replace that which is worn out and passing off as effete matter.

Now, in the human body there are water, fat, starch, sugar, nitrogenous substances, iron, sulphur, phosphorus, animal quinia, sodium, potassium, chlorine, lime, etc., but no alcohol is found! It has no analogue in the human system, hence there is nothing which it can repair; and there being in the system no power of a chemical or other character to decompose it, it cannot be appropriated in the repair of wasted tissues, nor aid in the formation of new. Therefore, I repeat that alcohol is in no sense a food. It is antagonistic to health and life, just in proportion to the amount used. The presence of alcohol in the blood is that of a poison, and not of a nutrient, weakening and diluting that fluid. And through the medium of the circulation it is conveyed to the nerve centers, which it influences, either by preventing, suspending or paralyzing nerve force, and thus rendering the brain incompetent to minister to mental operations.

The disastrous consequences of alcoholic poisoning, both to mind and body, and even to life itself, are probably due to the action of that narcotic in checking or suspending nerve-force in the gray cells of the brain and spine.

In conclusion I would say that it is not denied that alcohol may have its place as a therapeutic agent. But that it is often prescribed as a stimulant, under a misapprehension of its true nature and action, is evidently true. And when administered as food, as a nutrient, or even as a heat-producing agent, a great and serious mistake is certainly made.

It *kills* precisely in the same way that opium does.

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[For more than a quarter of a century we have taught and have acted on the principle that alcohol is in no sense a stimulant. We have not used it even in extreme cases of hemorrhage, either in surgical or obstetrical practice. And as we have not lost a patient from hemorrhage, no one has been killed by its exclusion.

Believing that light is needed in this direction by dentists, as well as physicians, it affords us pleasure to have this able paper to present to our readers. It has not been published elsewhere. —ED. JOURNAL.]

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## EMPIRICISM.

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BY J. TAFT.

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[Read before the Mad River Dental Society, May 22, 1883.]

“What should be done further to protect the public from the increasing empiricism practiced in our large cities?”

THE question assumes that empiricism is on the increase, especially in the large cities, and it would seem to imply that it exists to a greater extent, and is increasing more rapidly in the large cities, than in the smaller cities, towns and country. This is certainly not self-evident, and upon a careful survey, it fails to be established. The fact is, empiricism abounds everywhere, to a greater extent in some localities than others, depending quite as much upon the character of the population, for its growth, as any thing else. In communities that are pecuniarily prosperous, ignorant, penurious and proud, a fertile field exists for the display and growth of this evil. This is true, whether of cities, towns or

country,—wherever the conditions for the propagation and growth of quackery exist, it will certainly be found. Let it be borne in mind, however, that the people of the community may be intelligent upon many subjects, yes, upon all the general topics of the day and times, and yet exceedingly ignorant upon that which pertains to the laws of life, health and physical well-being. Such persons are often quite as easily imposed upon as the most ignorant, and manifest a stupidity in reference to the teeth, and the efficiency and skill of the dentist, that is surprising, and altogether inconsistent with their general intelligence.

How often is it that men, and women too, of education and culture, ministers, judges, esquires, colonels, majors, senators, occasionally lawyers, and, too often, physicians, will not only patronize, but endorse and recommend the most arrant quacks and quackery. To be fully assured of this, it is only necessary to consult the advertisements of quacks, and nostrums usually endorsed by the classes mentioned above, in the newspaper-press of the country,—daily, weekly, monthly, religious, secular, professional, scientific, etc. There are a few papers, half a dozen, more or less, perhaps, of the thousands of papers in the country, who claim to have freed their pages of this “iniquity,” but they are exceedingly rare.—“There’s millions in it.”

The word “further” in the question conveys the idea that something has been done to counteract empiricism in the past. That the relative empiricism of the present is less than that of the past is a question concerning which there may be differences of opinion, but that the amount of quackery, both absolute and relative, is far less than it would have been in the absence of certain instrumentalities that have been in operation no one can deny.

The following four agencies have been the chief factors in the development, growth and establishment in its present position, at least, of the art, science and profession of dentistry, viz: 1. *Associative effort*; 2. *A literature, both standard and journalistic*; 3. *Collegiate education*; 4. *Legal enactments*.

It would seem that the bare mention of these instrumentalities would be sufficient to bring clearly to the minds of all present the influence that each has had, in the upbuilding of our profession. When the combined influences of these agencies exist, it is impossible that empiricism can flourish. As men become educated



they become less inclined towards engaging in the doubtful practices of the quack.

Our literature is a potent agency in education, not only for the student, but for the practitioner as well, and how important is it, that the text-books put into the hands of students, be such as will give them correct ideas, and a just apprehension of that which they are to learn. Very rarely, if at all, will he who has attained a thorough knowledge of anatomy, physiology and chemistry, become an empiric in any department of medical practice. How all-important, then, that the foundation of the professional attainments of the dentist be laid deep and broad. That there should be better arranged text-books for the preparatory work of the student, I think no one will deny.

Our periodical literature, which is designed more especially for the practitioner, should have for its aim, not only the communication of facts, modes, operations, and news, but it should also, in a large measure, present and discuss the principles upon which the practice of the profession is based; and this should be done in such a manner as to elicit attention and secure the earnest interest of those who read. The persistent student never becomes a quack. In view of the capabilities of our periodical literature, and the magnitude and importance of the work it may accomplish, how very desirable it is that those engaged in this department should work harmoniously—coöperate in all ways possible for the accomplishment of the greatest good. Engagement in a common cause should induce a common sympathy and a coöperation of effort. Every journal should be a light bearer, a disseminator of knowledge. Self-conceit, or vaunted superiority, is certainly not an essential part of true journalism.

How to increase the number of readers of our journals is a problem worthy of especial consideration. A very small proportion of the profession are careful readers of our dental periodicals,—probably not more than one in ten. Without doubt, a much larger number scan the journals for items of a practical sort, but never think of studying the matters of deeper import, which require thought and patience for their comprehension and appropriation. Another class of persons, and probably comprising a greater number than either of those referred to, are those who usually confine their reading to the advertising pages. The latter two classes, and especially the last one, usually receive their journals

as a gratuity. No dentist who has subscribed and paid for from two to four good dental journals, and carefully read them, can be a quack.

The education of those who propose to enter the ranks of the profession is fraught with more importance than is usually attached to it. There are two ways in which this is accomplished, viz. : in the office, and in the college. It is ordinarily accounted a light matter to have in charge a dental student. Many young men make it a point soon, sometimes immediately after opening an office, to take a student, imagining that thereby their own importance and prestige will be promoted; while the truth is, that the ability to teach others is usually the least of their attainments. Many students are injured, if not permanently spoiled, by such puerile instruction.

But the young practitioners by no means do all the mischief in this direction. Men who have been many years in practice, in many instances, are totally unfit to train students. They have not the natural endowments, nor the acquired ability, nor the industry, and, perhaps, not the time nor strength.

Now all this may exist and result in only a negative injury. But in too many instances a positive mischief is done, either by the impartation of false notions as to what constitutes true professional character, or by erroneous teachings of principles and practices. There will not be found more than one in a hundred, who has been in practice more than two years, who can or will properly instruct a dental student.

It is often found that those who enter the dental college, after having office pupilage, are the most difficult to set right, and the most unpromising throughout the course of instruction.

Persons possessing no material aptitude for dental practice, are too often encouraged to enter upon a course of preparation for it; and the outcome in such cases generally is, either a total failure, or an awkward, bungling mode of practice, or downright empiricism, the latter oftener than otherwise.

The regular, well-ordered and systematic course of instruction in a dental college, renders it almost impossible that the recipient should be a quack.

It is the province of the college to impart to those seeking its advantages, a thorough knowledge of its principles and practice, —its science and art; and he who is well grounded in these, will

not descend to the ways of the charlatan. The half, or poorly educated, are the more likely to enter upon "ways that are dark and tricks that are vain."

It must be borne in mind, however, that it is not always in the power of any college faculty, to convert a rogue into an honest man. But it is, nevertheless, the duty of those who are preparing actors for important work and great responsibilities, to look to all the existing qualities, moral as well as intellectual, that may in anywise impair efficiency and success, and correct defects and perversities as far as possible. Good example will do much in this respect, but "precept upon precept, and line upon line," should not be omitted when need be.

In the reception of students by our colleges, it would be well if a proper system of discrimination could be adopted, by which the manifestly unfit and incapable would be prevented from entering. The evils resulting from want of a proper discrimination in this respect have been too often manifest.

Notwithstanding the disabilities under which our colleges have labored, they have stood as a great barrier to and a prevention of empiricism. It is doubtful if any other single agency has done more, certainly none has laid deeper and broader foundations.

But the suggestion is here ventured, that by the exercise of proper, judicious coöperation, far greater and better results could be obtained than hitherto. Were our colleges to present a united and unyielding front, quackery would flee away and hide, if it existed at all, in the dark places of the earth.

The unjustifiable and pernicious emulation and even strife, that has so often been employed to secure students, should be abandoned, and an emulation, as to who should accomplish the most thorough work, in the education of students substituted.

Such a course should at once elevate the dignity and efficiency of our educational system. It would give a greater degree of strength, and command more profound respect. Then, instead of being in a begging attitude to the rank and file of the average students, many of whom are mercenary and unprofessional in their aspirations and intuitions, the colleges could establish rules and regulations to serve the best interests of all concerned, and carry out their work accordingly. Such a course would place a broad and heavy heel upon quackery, in the city, in the town, and in the country.

Within the past few years, legal enactments have been brought into existence, and put into operation, for the suppression and prevention of empiricism, and for stimulating to a higher degree of professional attainments. This is the most recent of the four agencies mentioned in the former part of this paper, and so has not the advantage of so long a test of its efficiency as the others, still it has so well proven its capability that a large number of the States of the Union have enacted laws "Regulating the practice of dentistry."

These have for the most part proved eminently satisfactory, especially those of more recent enactment; the defects of those first adopted were corrected in those of recent introduction.

In most States, the promulgation of these laws has been the occasion of an exodus, more or less marked, of those whom the law pronounced incompetent.

When any such laws exist, the profession should see to it that they are enforced, as far as possible; and where they are found to be defective or inefficient, seek to have them amended. The laws that have been enacted to regulate the practice of dentistry have been as well executed, and better than many others, that have been in much longer standing, and in which a far greater number of persons are directly interested.

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## THE PASSAGE OF CAUTERANTS OR OTHER FLUIDS BEYOND THE ROOT APICES UNNECESSARY IN AVEOLAR ABSCESS.

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### ARTICLE II.

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BY FRANK BREWER, SAN FRANCISCO.

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IN article first we mentioned the fact of having been able to successfully cope with this affection, avoiding the passage of any fluid beyond the root apices, cauterant or otherwise, both in chronic as well as acute cases; permanently where the "*cemental*" structure was normal throughout, or temporary in conditions more advanced. To encourage additional reflection concerning



the irrationality of the orthodox system of administering to the affection, to simplify some of the pathological sequences, *frequently magnified*, again to draw our serious attention to a few of the structural constituents characteristic with a human tooth, notably ignored by essayists, and to correct some errors entertained by a majority of the profession concerning its ability to withstand abuse without resentment, and lastly to increase effort in behalf of its preservation when abscessed, this subject is extended.

The painful realization daily experienced in practice of oral and expressional *deformities* arising through the loss of the most beautiful teeth given by God to the human race, the more painful when traced to the hands of those possessing sufficient knowledge and ability to save them, to say the least, is but cruel—extremely so.

Did our patients possess but a rudimentary knowledge of what odontological science professes, not only would they scorn the profession for its wonted hypocrisy, but seven-eighths of its rank and file would go begging. The plea advanced by some in authority that through the toleration of abscessed teeth *life* may become *endangered*, will not stand, nor justify the sacrifice of every tooth merely because a sinus, and a drop of *pus* issuing therefrom, may be discovered upon the gum exteriorly opposite thereto. True, there is a line of limit in all things, and so with the toleration of such teeth, and we draw it right here. We do not champion the retention in the mouth of an infirm invalid, wrestling between life and death with some *chronic organic disease*, nor of one whose systemic diathesis may exhibit every drop of blood rotten to the core, nor of those having suppuration following all and any inflammation; nor again those with the roots prominently absorbed, or those defining necrosis. These, in the aggregate form but a third of the number in the list, and are better out of the arch; but theremaining two-thirds are savable, and should be preserved. The habit of telling a patient in every case where a sinus may be present, that the root is absorbed or necrosed, and cannot be saved, without an effort to *examine* the *apices*, is truly *criminal*. No operator should so pronounce until the root has been opened up and the apices examined, and the truth established beyond a doubt.

Habit, when once enthroned, frequently requires a lightning

stroke to unclasp its grip, and the daily practice of false representations to an anxious and apprehensive patient, is a most wicked habit. The presence of pus does not determine fatality of the tooth organ. Our experience has taught us that pus may exist at the apices for an indefinite period, followed neither by resorption nor necrosis. Again, pus may form and a *sinus* develop, and yet the surface era of either pericemental or periosteal tissue be but merely *ulcerated*. Its verification may be established, and is so in cases of malposition of teeth, principally the anterior, and through *overtaxation* and as well *elongation*; in fact in any conditions following *overtaxation*, and where escape of a surplus of fluid excretions are interrupted in their passage to the exterior. Two cases came within our hands with crowns exceeding the length of their roots, the only ones ever observed by us. Crowns exceeding a length of over two-eighths inch, unduly taxed, confirms the assertion.

Our experience has taught us, and confirmed the opinion, that "pus" and a "sinus" are developed without the presence or even the *shadow* of a cyst. That a "cyst," or sac is a *necessary* concomitant of a *tooth*-abscess is, as yet, an uncertainty with us. In fact we believe its primary origin may be traced to mere *mechanical* influence, principally the *force* of air passing through the apical aperture from the crown exterior, and also gaseous force, primarily originating within the canal, the distension and elongation being better encouraged through increased area of detached tissue from the root surface. In ascertaining the truth of this fact, frequently have we, upon opening a tooth, having no sinus, but with devitalized nerve, quickly passed our probe to the apices and found the pericementum in close juxtaposition to the root apices. And, upon leaving the canal open for a few days, the probe could be passed beyond the apices from a sixteenth to one-eighth inch, *no sinus* being present. Of course a certain degree of soreness was developed by pneumatic force, but upon treatment of the case the elongated tissue again returned to its normal position upon the apices. But this case of return of periosteal tissue to the root is not the only one, but the same has been realized by us invariably for years, not alone in acute cases, but as well in those chronic. Let any careful operator follow the same system of treating abscess common with us, and which a future article

will explain, and he may easily ascertain the truth of the phenomena of which we mention, provided the periosteum has not been destroyed with "carbolic acid," "creosote" or "arsenic," and provided the cementum is yet normal. We care not how far the probe may extend beyond the apices and fail to touch sensitive tissue, yet if the administration of antiseptics, cauterant or otherwise, are restrained from passing beyond the apices, and the introduction of dressings follow, without forcing the air through the apical aperture, the canal being sufficiently enlarged for the purpose, the fact may be realized. But we pass on: Thence we perceive that pus *may* arise and a sinus appear upon the gum exterior, and yet no resorption of the root or a cyst be recognized. The mere presence of pus should create no undue apprehension, for how can any inflammation, not terminating resolutely, exist without pus? Pus *must* follow, even though but a tithe of the pericementum becomes secondarily influenced, and though but a mere drop in quantity be developed, yet it *will* travel to the exterior. Pray what alternative has it? The absorbents cannot take it up, even though encouraged by "metamorphosis," for they are choked to their utmost capacity. No, no! the presence of a *sinus* proves not only a true blessing by relieving the root from purulent fluids, and preventing atrophy, but also a true index in determining certainties or uncertainties as to the subsequent results.

True, through the pressure of osseous septa, exosmotic functions become the more interrupted, and the vascular tension of the tissue the more strained, and as well the extravasation of infiltration into the tissue, the more increased than is possible with other parts; still, nevertheless, the chances for recovery are none the less decreased. An invalid tooth should receive the same *rest* and *protection* that is afforded other tissues.

In fact the cause of failure of many cases may be traced to a neglect to protect the organ from concussionary forces during reformatory progression of the impaired tissue, more especially so as we perceive that no other part of the osseous frame is so subject to a positive concussionary force as a human tooth. The heel of the foot is more nearly correlated, but yet falls far short of it, for while the thickness of the tissue of one can be measured by inches, the other presents but that of common wrapping paper.

Now let us look into some of the phases concerning the *cemental*

organization which forms the most prominent pivotal key determining life or death. A whole volume might be written upon it. It is a notable fact with previous essayists upon root anomalies, that they entirely ignore this structure, and the important relations it bears in sustaining a tooth with parent nerve devitalized.

A tooth is far from dead even though robbed of its nerve and its main offshoots.

The anatomical analysis revealed by Messrs. Bodecker, Heitzman and Abbott, not only verifies the theory of Dr. Tomes, as to the presence of nerve fibrils within the dental tubuli, but teaches that the entire part from tip to tip is alive with vitalized living tissue, and we fully believe possesses, atomically, the same phenomena of independent existence, microscopically verified, with other tissue, and as well, each and every atom performs an additional function, besides that of feeding and digesting its own pabulum, that of *repair*, and instead of becoming metamorphosed, and matured, and entirely dormant at the age of twenty-one to twenty-five, still continues indefinitely through life, not only in the work of replenishment of natural loss, but also replenishing solutions of continuity incurred by accident. It is but a few days since, that we were permitted to examine a case of a cicatrix of one-sixteenth inch diameter upon the labio-area of the right superior central incisor. The chipping of this fraction originated from contact with the edge of a chisel in its descent from a certain height to the ground. The cicatrix presented one of the most beautiful sights of enamel repair ever afforded our vision, and forms one of the *many* cases upon our record opposing the prominent claim that the functions exacted of the neural tissue ceases its labors at maturity, *i. e.*, twenty-one to twenty-five years of age. But this phenomenal function is the work of a tooth having a *living* nerve.

Now then, let us turn our attention to a *dead* tooth, and ascertain the truth or denial of the claim that its corpse is but a *peg* stuck in the jaw. We first, then, present and answer the following question: Do the canaliculi or dentine tubular tissue cease their vitality and life simultaneously with the death of the *nerve when devitalized*? We reply, no! provided the same has not been paralyzed with arsenic or other escharotics. Indeed, so excessive have we found the sensitiveness in certain cases, or those



where the nerve organ had become calcified through abrasion, that an obtunder was demanded in their reduction. In one case at Santa Barbara, and which at the time was recorded in the *Missouri Dental Journal*, the sensation was so severe that the contact of the drill made the patient fairly howl, and required several applications of chloride of zinc to reduce it. This sensation was observed not only throughout the zone of calcification of the nerve locality, but embraced all the intermediate area, defining the original nerve canal and cementum. The patient being at the time an invalid, from nervous anomaly, this phenomenon was attributed thereto. But of late we find ourselves mistaken, for two months since an additional case, similar in character—nerve calcified—came within our hands, whose constitutional diathesis proved the very opposite of the previous case. This one also, was found excessively sensitive, and required several applications of a cauterant to control. Numerous cases of teeth with nerves calcified, and manifesting more or less sensibility, have we operated upon. In cases of *spontaneous* devitalization, uninfluenced by any original accident of mechanical injury, this phenomenon is again verified, and the sensation will be observed located at a position contiguous to the cemental structure. Again, it may be recognized in cases of gaseous encroachment within. A tooth laboring under gas encroachment, and with no abscess or sinus, as soon as the crown is opened, relief seems almost instantaneous, especially during the latter condition, and as well as at others, *thermal* influences are quite readily observed, and the *passing* of the *finger nail* upon the cervix of either labial or buccal surface of the tooth, the same is noticable. We have retained the same vitality by withdrawal of a nerve following its *anæsthetization*, by which no *excitation* followed at any point along its course, especially necessary at the apices. Hence, if this be all true, from *whence* cometh the nourishment *sustaining* this neural *vitality*? We can only reply, from the *periosteum*, aided principally and protected by the peculiar conformation of the *vascular* tissue of the *cementum* and *Nasmyth's* membrane.

Thence we perceive that a tooth still lives although its interior *strength* of neural force be *absent*. Hence, upon the *periosteum* depends the entire *responsibility*. But this though presents but a *part* of the point seriously to be reflected upon. What is

essential to not only the preservation of the internal structure, but that of its root exterior, is that *every atomic part* of the *cementum vascularity must be normal*, to *preserve* which its pabulum must be in regular *quantity* and received *uninterruptedly*, or atrophy overtakes some part thereof. The minute diametrical limitation of *lacunæ nucleæ* and labyrinthal intricacy of both cellular and intracellular arrangement, and their correlations with the pericementum, make the labor nourishment the more difficult and delicate, and as well the more readily encourages atrophy. An atomic part of the cemental structure once dead throughout to the dentine, leaves no more chance for its recovery than for a dead dog under a hot sun in July. *Resorption* will invariably follow, no matter how normal the pericementum in opposition. Now to prevent it is the motive of the author, and an apology for this lengthy dissertation. Is it necessary? We answer thus: Where some of our best and prominent confederates give issue to the following, as for instance, that gutta percha should be forced, by pumping into the apices, and that we should cease only when the patient cries *oh!* or, again, that the canal should be *immediately* sealed; or where the approach to the mouth of a canal does not admit the point of a broach, enlarging is unnecessary; or, again, the canal *should not* be enlarged in reaching the apices, and as well that a tooth may be boiled and still be retained and perform duty when replaced within the jaw. It is high time the a, b, c of the primary was thoroughly preached up, especially so when some of our best pathologists have their ears open in conversation and are mum. There is one fact fully established, and that is, teeth with apical apertures sealed by nature know *no abscess*, or if otherwise, its etiology is traceable to some mechanical interference disturbing its equipoise. Hence, it is our paramount duty not only to heed and study the lesson nature *tries* to teach us, but to *imitate* it. The cemental and peri-cemental tissues are so wedded in their correlations that if one suffers the other sympathizes equally, thus should we endeavor to keep the equilibrium of both at a normal standard. No one is able to define the length of time the cemental tissue may survive lack of nourishment, nor should an operator jeopardize its chances in any form through intrusion of agencies the character of which is recognized as harmful to other tissue. While inflammation exists at the apices nourishment to the cementum is an impossibility, at

least the pabulum is poisonously putrescent; and as the tissue *breathes* as well as feeds, the poisonous dose becomes doubled. Prof. Gorgas, of Baltimore, endeavored twenty years ago to instruct us to the effect that no apical aperture should be closed while *soreness exists there*. Have we heeded his *admonition*? It would appear not. The fact that the typical formation of over five-tenths of the human teeth at their apices are sword-like in form and point, the dangers are greater for abnormality than where obtuse, and as we are unable to discriminate as to the character, we are left but one alternative, to address ourselves to each case. In such a supposition more especially is the danger increased, in case we deal with such conditions, if the bulk of the pericemental area becomes inflamed, for then the natural function is lessened; and the greater force of the momentum of concussion and vibration is the more directly conveyed from the coronary to the apices, thus encouraging atrophy.

A fatal mistake is universal among many of our profession, to the effect that conditions are always normal at the apices, or within the alveola, because no exterior manifestation contrariwise is manifested. Case after case is on record of abnormality of the root and its absorption without perceivable recognition. But a few days since, a gentleman came in my hands and had a left central superior incisor extracted, the rocking motion of the tooth amplifying a correct decision of advanced root absorption, and justifying its sacrifice. Upon removal of the tooth one-half of the root's length was absent, having been resorbed, and from the canal was projecting gold wire three-fourths of an inch in length, sharpened at the apical point. The wire had been inserted for the purpose of closing the apical aperture, quite seventeen years previous, to a day, and the impression experienced upon the part of the patient, at the time of insertion, which was assisted by the mallet, was that the point had extended beyond the apex, and the idea was conveyed to the operator, but was not heeded. During all this period the same impression has been continued, and yet but twice has there been manifested any special outer recognition of an anomaly within. This was due to his good health and activity of the absorbents. In the generality of systemic anomalies, the same conditions and toleration would not have extended over five years at the least.

[*To be continued.*]

## REGULATING TEETH—A CASE IN PRACTICE.

BY GEORGE W. KEELY, D. D. S., OXFORD, OHIO.

THE case illustrated below is that of a lad nine years of age. Both parents had a normal dental development; and neither of them knew of any irregularity of the teeth in either family. Figure 1 shows a correct antagonism of the teeth when the case was presented—the boy having a well-developed arch for one of his age.

The four superior and inferior incisors were pretty well developed, as also the first permanent molars. This case illustrates a very frequent cause of malposition of teeth. Some six months before this model was taken, I extracted the temporary incisor, and found a small portion of the palatine surface of the root absorbed as a result of the pressure of the labial portion of the permanent tooth coming in contact with it, giving it an inward inclination, which was the cause of the trouble, as will be found the prolific source in nearly all cases of this kind. When the temporary tooth was extracted, the permanent one lacked about the sixteenth of an inch of being locked inside the inferior teeth. The boy was given a stick, made from a piece of wedge-wood, and instructed how to use it, as an incline plane; and had my instructions been followed, the tooth could have been easily forced to its normal position. Many of my little patients are successful in this way.

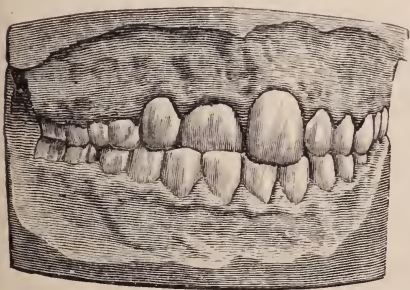
*Figure 1.*

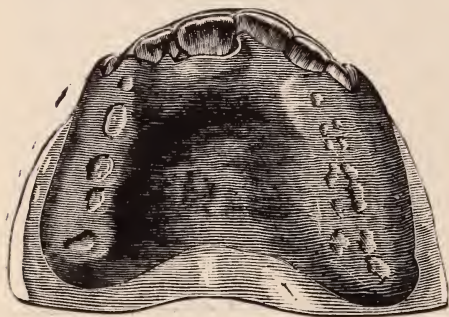
Figure 2 illustrates the appliance used to bring the tooth to its normal position. A correct impression was taken, and a perfect model obtained. Then a gutta percha base plate was fitted to the roof of the mouth, covering the permanent molars and anterior temporary teeth. This was trimmed and

fitted correctly, when a thin layer of soft wax was placed on the plate, over the grinding surfaces of the teeth, and the bite was taken, raising the teeth apart just enough to allow the incisor to swing clear, in its passage to its normal position.



The palatine surface of the plate was made thick, extending well up to the cutting edge. This was vulcanized, finished and fitted firmly in place; and the grinding surface on the plate was preserved correctly for masticating purposes.

A slot was cut in the plate, opposite to the palatine surface of the incisor, and a small piece of Sea-tangle-tent adjusted into it. Then the fixture was put in position. This tent expands gently and gives the tooth a start; and it may be renewed two or three times, when compressed pine wedges may be used. The plate was removed daily and cleansed; and the patient was required to brush his teeth. On the evening of the eighth day the tooth was in position, and the plate removed.



*Figure 2.*

time, but it is more prudent to "make haste slowly."

No retaining plate was used; but the tooth was held, some ten days, in position with a thread, tied to the left lateral, carried over the left central, and under the refractory tooth, and then tied to the right lateral, the tooth remaining in perfect position. This kind of an appliance is particularly desirable in protracted operations, for the reason it holds all the other teeth in position, it being impossible for any of them to elongate or change.

This cut was taken after the tooth had been moved to its present position, a little more than one-eighth of an inch. During the time the plate was used, he attended school regularly, and made no complaints.

The work could have been accomplished in half the

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## HELPS IN STUDY.

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BY GEORGE WATT, XENIA, O.

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[Read before the Mad River Valley Society.]

A RURAL blacksmith's little boy watched his mother as she was tacking down her carpet, at the close of that joyous season known as house-cleaning week. He saw how nicely each little

nail went to its place, under the blows of the small hammer in the hand of the skillful woman. He was a kind boy, and wished to help in the work; but considering his own smallness, the thought struck him that he would need a much larger hammer than the one used by his mother, in order that his blows might equal hers. He didn't succeed very well, even though he tried his father's sledge hammer; and sometimes professional men have but little better success when they resort to similar devices.

Take an illustration. Is there more than one variety of dental caries, is a question that has been asked, (and answered too, for that matter, but an effort has been made in a certain quarter, to re-open it.) Now do we need microscope, balances, reagents, etc., to settle this question? Certainly not; for the unassisted eye, and ordinary observation will answer all purposes. We find one specimen of decay jet black, even when recent. It progresses slowly. It changes the texture of much tooth-tissue that is not displaced or removed. It leaves this changed tissue brittle and friable, with but little sensitiveness in the bottom of the cavity. It is mainly found in the teeth of persons whose breath ordinarily gives off sulphuretted hydrogen. And all these can be recognized without microscope and scales as well as with them. There is no call for them, unless to make a display.

Another specimen of decay is found, which, new or old, is whiter than the texture of the sound tooth. This usually is deeper in proportion to its diameter than the black; the bottom of the cavity is much more sensitive; more of the tooth substance is removed or displaced; the decayed portion is plastic rather than friable; very much of the decay can be washed or wiped out of the cavity; it makes rapid progress. And all these points of difference can be recognized as readily without as with instruments, or methods of special research.

Or, suppose the question to be: Are the lime-salts—the hard materials of the tooth—removed by dental caries? The believer in the chemical theory of decay will tell us that the question is indefinite, but that, if this form of it must be retained, he will answer both yes, and no. He will tell us that when he finds a jet black decay, in its early stages, he does not expect to find much, if any diminution of the quantity of lime-salts. What is there to remove them? He does not believe that the reagent concerned is capable of forming soluble compounds

with the lime-salts of the tooth. Or at most they can be but slightly soluble. And besides, they are retained in a state of minute division among the particles of the blackened organic matter, which greatly tends to keep them in place. Even were they readily soluble in saliva or mucus, the carbonized organic matter would almost exclude the solvent, and thus allow them to remain. The intelligent operator would readily recognize their presence by physical signs, while he would also realize the fact that there had been nothing in contact capable of removing them.

Or he will tell us he finds a cavity of decay greatly differing from the black one in several respects. It may be almost colorless, slightly yellow, orange, brown, or even black, according to its age, and perhaps influenced by some other circumstances. It is far more common than the jet black variety, which, however, is by no means uncommon. But its leading trait is that the cavity of decay is always partly, and often almost completely filled with soft tissue, which is not readily washed or wiped out, as is the *debris* in white decay, but is easily cut, even when so little disintegrated that its organic structure is still quite observable.

Now, in this variety, the operator needs no chemical analysis to inform him that very much, indeed nearly all of the hard matter is removed. And a chemist cannot persuade him to the contrary by the most careful analysis of a specimen of decay, especially if he fails to tell which kind of caries he had under examination, or if he incidentally mentions that it was the black variety. And when excavating a cavity of this gelatinous variety of decay (if the term can be tolerated), the intelligent dentist knows as well without any analysis, as the best chemist can know with it, that the hard matter of the tooth is mainly dissolved away, as far as the decay has progressed. The chemist can tell more accurately whether or not a trace of lime is left; but the facts necessary to proper practice can be recognized by the one as well as by the other.

It cannot be disguised that, while chemical and microscopic researches are, in their very nature and essence, extremely valuable, there is a degree of pedantry sometimes displayed in their use, by parties not competent to use them properly, or to make proper deductions from the results thereby obtained. We can illustrate this by narrating an incident which occurred in an early



period of our medical practice : A man as strong and healthy as a wild buffalo, fancied he had contracted pulmonary consumption. He had heard of the stethoscope, and demanded an examination by its use. His physician had none, and borrowed ours, politely asking us to accompany him and witness the examination. The instrument was not so common then as it is now. Our curiosity had become aroused, and we went with him. After dilating on the merits of the instrument, and especially on the accuracy of its revelations, he began the examination. Placing one end of the instrument to the patient's mouth and the other to his own nose, he directed the patient to breathe through the mouth only, and he smelled the breath as it emerged from the instrument. He pronounced the lungs perfectly sound, and the patient was happy.

This is an extreme case, but it is approximated by some of the so-called researches within our own profession.

Now, it must not be supposed that we lightly estimate chemical analysis and microscopic research when they are legitimate, that is when they are used for the purpose of gaining useful knowledge, and not merely for display. A man had a severe attack of erysipelas, which had begun on the tip of his nose. He believed that all the trouble had resulted from the bite of a spider, and he became the relentless enemy of spiders. One morning he saw one draw itself up to the ceiling, and at once he seized his trusty rifle and shot it, without mercy. In our boyish way of estimating, we thought the gun quite uncalled for, as a broom or a stick would have served as well; but either would have been less sensational, and much less noisy than the warlike weapon. We are often reminded of this when we see instruments brought to bear in research which can be made quite as well, if not better, without them. When the microscope and the balances are brought into requisition to know if any considerable proportion of the lime-salts is removed from a carious cavity by that form of decay which is characterized by the presence of large quantities of gelatinous materials in the cavity, we are shooting spiders with a rifle, if not smelling breaths through a stethoscope.

An amusing feature, too, in some of these so-called instrumental researches, is found in the fact that, in a few years, or even after a few months, in some cases the observers assume that, of all "our glorious profession," they, and they only, are experi-



menters—that only they are making progress. They tell aged men their experience in the most patronizing way; and in some cases find, afterward, that their reports of their experiments read so much like the aged brethren's accounts of ones tried before they were born into the profession, that they are in danger of being charged with plagiarism. Sometimes a compound word is coined for the occasion by the youthful experimenter to express his own opinion that the more aged member can merely talk about the researches of others, but has made none himself, while the truth is, in some cases, that he has tried more experiments than the younger brother has ever heard of. But all this is in perfect accord with human nature, and we can see the principle illustrated almost daily. Not long ago we heard a student who had spent less than six months in a dentist's laboratory talking with a mechanical dentist of long experience, advising him to come and learn from him, saying, "If you only understood dentistry as well as I, you could double your wages at once." But even this consideration failed to induce the old man to take a course of instruction from the would-be young teacher. And this is human nature too, for we old men often neglect, or even reject opportunities for improvement.

The microscopic and chemical analysis have each an important office to fill in dental science; and it is not likely either will be too highly esteemed. All we ask is that they be legitimately used by competent parties. If dental caries results, to any extent, from the action of acids, it is very important to know what acids. And here the microscope comes in as an important help. If an acid combines with tooth-substance, a salt, or salts must result; and the quantity obtainable for examination in any given case must be small. Much can be learned by watching, with suitable power, the crystallization and re-crystallization of the salts thus formed. By evaporating the liquid slowly, and rapidly, by using different powers, and sometimes by polarization of the results, much information can be gained. We have found such observations so fascinating that very often we have chased night into morning, day after day, for many weeks in succession, while making them.

The experimenter often fails to get the best possible aid from his microscope by using too high powers. In the popular mind this instrument is valuable, or otherwise, in proportion to its

magnifying powers, while the distinctness of its definings are left out of consideration, or regarded as of minor importance. How often, when a microscope is under consideration the first question is, how much does it magnify? And even some who regard themselves as experts, fail to give the most reliable information, from having relied almost exclusively on high powers. When we bear in mind that, other things being equal, the liability to mistake in observation varies in the ratio of the squares of the powers used, we can see the importance of receiving such information with a few grains of allowance. High power observations are very important as well as instructive. But what we are asking for is reasonable caution in the statements of results, repeated observations, also before positive assertions are made respecting them, and due caution, as well, in the reception of the information thus obtained. To steer straight forward, avoiding blind credulity, on the one hand, and cold suspicion on the other, should be the aim of every progressive mind, in our profession. Truth, simple, pure and bright, is found only in this way. May you all attain to it, and enjoy the bliss which can not be otherwise possessed.

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## WHAT SHOULD BE DONE FURTHER TO PROTECT THE PUBLIC FROM THE INCREASING EMPIRICISM PRACTICED IN OUR LARGE CITIES?

BY C. M. WRIGHT, D. D. S., CINCINNATI.

[Read before the Mad River Valley Dental Society.]

THE philosophical use of the word empiricism has long been discarded by the medical profession; and the epithet, "empiric," has become one of reproach. In the true sense, the empiric is one who learns by experience and observation. The burnt child has learned by empiricism to avoid the fire. In its philosophical meaning, it is a valuable aid to what may be distinguished as scientific knowledge.

What *we* mean to-day by empiricism, can be definitely stated as the method of the dentist who advertises a "Company Dental Office," and offers to make a set of teeth for \$10, and to extract a tooth *without pain* for fifty cents. Unfortunately, owing to the triple character of dentistry, we are brought into a certain com-

petition with these men, and naturally wish to protect the public from them.

Dentistry, as we all know, is not a profession nor an art, nor a trade, but a curious mixture of the three. The list of subjects for discussion of any dental society in Europe or America proves this. This is why we are distinct in character, and cannot fully affiliate with physicians, or with sculptors, or with silversmiths and jewelers, and yet must be medical experts, artists and mechanics in our own department of science and art. These men compete with us in our trade character, and you have appointed Prof. Taft and me to write essays on the subject, hoping, no doubt, for the suggestion of some legitimate way by which the public may be secured as our patron, and these men either driven to the wall, or forced to do as we desire. If these men simply advertise to make sets of teeth for \$10, and do what they say they will do, and do not mislead the public, and conduct their business as shoemakers, clothiers, manufacturers and merchant princes do, although by so doing they violate the spirit and the letter of a code that *we* have adopted, I do not see that they are doing wrong, or that we have any *right* whatever, to interfere with them. If they injure our business, we must look out for ourselves, and adopt other or better means to seduce the public away from them. The great law of supply and demand is based on secure foundations in the science of political economy. If the people demand calico, the manufacturers cannot long force high-priced silk upon them. If the silk proves better, more durable, more beautiful, and *finally* cheaper than calico, the demand for it will increase, and calico will be worn only by the very poor. The manufacturer must *prove* the superiority of his silk, in order to create a demand on the part of the people. So must we. This is our work. The man who advertises calico teeth at \$10, is not, on this account, a quack. When, however, he advertises "to extract teeth without pain," he is a quack, and a charlatan. To offer inducements publicly (or privately) for foolish and ignorant people to come and be painlessly mutilated, is quackery, and on a par with the crime of the medical abortionist. To painlessly extract a tooth, that dentistry should preserve; to painlessly excise a sore toe that surgery should save, is the height of injustice and wrong; and, to make a practice of this, or to advertise it, is quackery of the deepest dye. No true dentist would dare, in the presence of his own cultivated



conscience, to extract a tooth that could be saved by the highest skill, whether he may possess that skill and science himself or not; any more than an oculist would dare to pluck out an eye, simply because he could do it painlessly, or, because the patient was too poor to pay for treatment, or too ignorant to properly value the organ, or too impatient to suffer treatment, or impertinent enough to threaten to "give the job" to another oculist. About the practice of advertising to extract teeth without pain, we, in the professional phase of our triple character, have a right to exert our most vigorous interference. Our regard for the health of the community demands it. Our regard for the dignity and nobility of dentistry demands it. Our regard for the future of the human face demands it. By the seductive nitrous-oxide gas, and our improved forceps—blessings of incalculable value in their proper use—an army of so-called dentists, are *steadily changing the anatomical proportions of the faces of the American people, besides crippling and preventing the important function of digestion, thereby making us a nation of dyspeptics, and entailing mental as well as physical deterioration*. I need not remind this learned society of the injurious effects of the loss of crowns, roots and alveolar processes of the human jaws, and of the well marked natural consequences of this great destruction of tissue on the muscles of facial expression. The certain effects on the levator and depressor anguli oris, the depressor ala nasi, the orbicularis oris, the buccinator, the zygomatic and labial muscles are well known to sculptors and painters, if not to dentists. By the law of *evolution* what will the American face be in the future? In the light of art to-day, what sort of a figure would the typical mouth and lower half of an American face cut, beside the model Greek face? And the American dentist, with his boastful mechanical and inventive genius, has not *culture* enough to blush at his own destructive work, because it is done deftly and painlessly. Then, we have invented nitro-glycerine, placed it in the hands of children, and sat and smiled at the use they make of it. Is this superior intelligence or imbecility? Here is where we should wake up to a desire to "protect the public from empiricism," whether practiced in large cities or remote villages. Let us stop *this* evil by legislation, or by any means we can. We have a right, aye! a *duty* to perform here, in sounding the alarm to the people—in publishing warnings to the public—in resorting to any



means possible to us to take this dangerous bauble out of the hands of ignorant, and consequently fearless quacks and charlatans. Let the Mad-River Valley Dental Society begin the fight, and carry the war throughout the State and Nation. Let us begin the work of "protecting the public from the increasing empiricism" by devising a plan for the forcible removal of "laughing-gas" from the hands of unqualified men. Other work and legislation is simply selfishness and injustice, compared to this. We have a State Board of Dental Examiners. Would it not be well to compel *every dentist* who wishes to administer anæsthetics, to apply to this board, and by a thorough examination, to satisfy it of his special qualifications on this particular point, and to receive a special certificate or "permit" from these officers of the State for the use of these agents? Make *this* a law and attach a penalty for the violation of it. This would be of special advantage to the people, and would be appreciated by them; for no matter how free and independent they may feel, they have no right to be injured by quacks, with the sanction of an honorable profession in its *professional character*. No dentist would feel himself injured, for, unless he is willing to qualify himself, he knows that he should not be allowed to risk the lives of his fellow men, and if he does not wish to administer anæsthetics, as many do not, his conscience would permit him to recommend the *qualified man*. Appoint a committee at this meeting to confer with other committees from other societies, and push the subject into the legislature and before the people. In a short time we should feel that the man to whom we send our loved and valued patients, for the administration of nitrous-oxide gas, and the extraction of necessary teeth, was at least physiologist enough to know about systemic and pulmonary circulation and medical man enough to be able to form a diagnosis of disease, and expert enough to know what and how to apply restoratives for scientific reasons in cases of need. That we cannot be sure of this now, is a disgrace to us, and detracts largely from our boast that we are *professional gentlemen*, and that dentistry is a specialty of medicine, and a profession, instead of a trade. This should be my first suggestion. If it is not practical, and I know that our government is not paternal in character, rather permitting young America to play with any edge-tool till scores of people have been killed, and then reluctantly taking the plaything away, I should suggest a com-

bination of city dentists, of the better class, and the appointment by them of a thoroughly competent specialist for the administration, for them, of anæsthetics, and the extraction of teeth condemned to the forceps by themselves. These dentists should agree to support this appointed specialist, by giving him employment at respectable and fixed fees, calling him to their offices when desirable, or sending, or accompanying patients to his rooms. He, on his part, should agree not to undertake any mechanical dental work, either in the operative or prosthetic departments, but to devote himself to his specialty, as a chloroformist does in a city hospital. In this way we alone would be responsible for the extraction of teeth, as we alone should be. In cities where there are dental colleges, it seems to me that much might be done toward the suppression of this quackery, if a dental hospital or infirmary, or poly-clinic, could be kept open the year round for the administration of anæsthetics, the treatment of diseases of the teeth, &c., free to the poor. Operative and mechanical departments might also be kept open with the privilege of charging for operations just sufficient to pay expenses. This would be a boon to the poor, an advantage to the better class of dentists, and a training school for students, the value of which was so pointedly shown by our President in his essay on Dental Colleges at our last meeting.

I have suggested three plans: The first is somewhat similar to the methods discussed by English dentists, and warmly advocated by many of the best men in London. You are familiar with the arguments of these distinguished men, and of such men in our own country as the late Dr. Barker, of Philadelphia, and Dr. Geo. Watt, of our Society. The former in his paper on the abuse of "nitrous-oxide gas," and the latter in his many lectures and essays on the subject of "painless dentistry," "anæsthesia," "nitrous-oxide gas," etc., etc., have demonstrated the importance of a proper *qualification* of the man who may be trusted with these powerful agents.

The second and third plans are means that lie within our own hands entirely, and require simply harmony of action on our part. Feeling as I do, and as I have often expressed before, that the reckless extraction of the natural teeth, and the substitution of *factory teeth* is peculiar to our country, and a disgrace to us, I have offered these plans in pursuance of your invitation, hoping

that something may be *done* to stem the current of physical *destruction and false art* that threatens to overwhelm us. I have approached the subject in reverence and modesty. If I have expressed myself dogmatically, I prithee charge it to my mental *diathesis* and the love I bear ye.

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## PREPARING GOLD FOIL.

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BY CHAS. A. MURRAY, D. D. S., DELPHOS, O.

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IN a back number of *Dental Cosmos*, Dr. Marshall Webb gave, in his opinion, "the only proper way to prepare cohesive foil for introduction into cavities," and for the benefit of the younger brethren, who perhaps did not see it, we will endeavor to explain it: Take a sheet of No. 4 or 6, fold it so the strip, after being folded, will measure about  $\frac{3}{4}$  of an inch in width; then, with good foil shears, clip off crosswise of the fold, strips about  $\frac{1}{8}$  of an inch in width. This gives you strips equal to No. 20 in thickness.  $\frac{1}{8}$  of an inch in width, and about  $\frac{3}{4}$  of an inch in length, and, as Dr. W. claimed, "The only proper way to work it."

But after giving this method a thorough trial, I am convinced, as far as my own practice is concerned, that better, and what is important to the suffering patient, more expeditious filling is obtained by preparing the foil in the following manner: Cut a sheet of No. 4 into four strips, and with a clean napkin, roll each strip into quite a compact rope, then clip off this rope, or roll, cylinders from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch in length, and you have your foil in shape to work it rapidly into the largest cavity or the finest contour.

I find, in my short practice, nothing so good for keeping up the borders, and condensing them so thoroughly as foil prepared in this manner.

After filling the cavity, not flush, but nearly so, I strap it over with one or two pieces of No. 60, which gives it a beautiful finishing surface. It is claimed that the original molecular formation of the gold is least disturbed by carefully preparing in the latter way, or rather it is in better shape to restore, by heat, its originality, thus increasing its cohesiveness. It is not expected, Mr. Editor, the older members of the profession will peruse this

note; but I send it thinking some of my younger brethren, "among whom I am the least," may find a point.

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## Editor's Specials.

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"Write the Vision and make it plain."

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### ALCOHOL.

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ASIDE from the salvation of human souls, there is no subject in morals, politics, or social life of so much importance as the nature, uses and abuses of alcohol. Our first article, in this number of the JOURNAL, is an able argument, tending to show that, not only the masses of society, but most physicians as well, have been holding to, and acting on, a false theory in reference to its therapeutic properties and uses. If a mistake has been made, which we sincerely believe to be the case, it has been almost universal, as well as radical. In accordance with the sentiments of Dr. Nichols, whose precise language is not now before us, we regard alcohol as frequently a convenience, but never a necessity. If it were blotted out of existence, and with it all knowledge and memory in reference to its mode of preparation and manufacture, society would be greatly the gainer, and not the slightest arrest in the progress of the arts and sciences would be observable. In view, then, of the manifold woes and sorrows brought on the human race by its use, as a luxury, why can we not rise as one man, and banish it from the world, to the abyss of the bottomless pit, where it belongs?

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### DEATH—A SHINING MARK.

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AND still they go through the lone valley, and we are left.

"Thou hast all seasons for thine own, O Death"!

But a short time since we noticed the death of one of the younger and most promising and hopeful members of our profession. To-day we record the demise of one more mature in years,



whose call to go up higher is more in accord with the nature of our expectations.

ISAAC KNAPP, M. D., late of Fort Wayne, Indiana, and one of the most eminent dentists of our country, was called to rest on the 9th of May, 1883, having reached almost the allotted "three score years and ten," as he was born at Dummerstown, Vermont, March 22, 1814.

Dr. Knapp received a good preliminary education before coming west, which he did at about twenty years of age. He taught school to acquire funds to carry on his education, till in 1839, he graduated at Marietta College.

After this he taught in the south, then in Indiana, and returned to Vermont, with the intention to study for the ministry. Losing his voice, he studied medicine under his father, and received the degree of M. D. from the University of Vermont. Returning west he practiced medicine with great success some fifteen years. Finding a necessity for a life less irregular, he studied dentistry, and in 1855 began its practice in Fort Wayne, Indiana, and was at once recognized as a great acquisition to the young profession, whose greatest need was just such men to lay its foundations deep in science.

Doctor Knapp was three times chosen President of the Indiana State Dental Society, was Vice-President of the American Dental Association—was in every way an active, useful, honorable, and honored member of the profession.

Doctor Knapp was a man of deep convictions, and stood by his principles. He was opposed bitterly to American slavery, when to be an anti-slavery man was to be hounded as an abolitionist, by herds of hoodlums whose hostility was as dangerous as it was disagreeable. He died as he lived—A GOOD MAN.

His history is not unlike our own, and this may be an element in our regard for his memory. Designed for the ministry, driven by loss of voice into medicine, and from that to the specialty of dentistry, through failure of physical vigor. Could we believe that we have been led to a career of usefulness equal to that of Dr. Knapp, we could rest from toil in perfect content when called from labor to repose. How much we shall miss him as a counsellor, only time can tell. Let the young follow his bright example; and let us all cherish his memory.

## AMERICAN DENTAL ASSOCIATION.

THE official notice of the coming meeting of the Association is found on another page of this number. We shall be not only gratified, but delighted, if this one prove to be the best and most interesting and profitable meeting ever held by the Association. Let all who possibly can, go and work to make the meeting as good as it can be. Leave all dull axes at home, as the Association has sold its grindstone, and it is hoped will not replace it. Let selfishness be laid aside. Let officers, members, delegates and visitors go for the purpose of blessing and being blessed, and all will be well.

## "THE DANCE OF DEATH."

THE immortal and matchless Burns tells us that

"The De'il came fiddlin' through the town,  
An' danced awa' wi' the exciseman;  
An' ilka wife cried omadhaun,  
We wish good luck wi' your prize, man."

And in order that the sources of amusement may be equalized to society, it would be well to have, not the De'il, but the law come fiddlin' through the country, to dance away with the quack Johns in the dental profession, who, without professional, or even lay knowledge, advertise dangerous operations performed painlessly, under the influence of "vitalized air," "laughing gas," "medicated ether," etc. The pilot and engineer on a steamboat undergo careful examinations by competent parties, before they are allowed to take the responsibility incident to their positions. Who would knowingly ride with an engineer ignorant of the nature of steam, and unfamiliar with the movements of an engine? Yet every day men, and especially women, allow parties wholly ignorant of the laws of life, without even slight knowledge of anatomy and physiology, ignorant, too, of the nature and action of anæsthetics, as well as of remedial agents and measures in cases of danger—they allow such as these, we say, to take them a voyage on the deep, narrow river that divides this world from the next, without the precaution of rafts or life-preservers in the shape of practical knowledge. These things ought not to be. Often we have heard the most popular dentists,

with good medical, as well as dental educations, remark, each in his place, that if he should conclude to use anæsthetics in his practice, he would go to some one competent and experienced, and take a thorough course of instruction from him before presuming to engage in a practice involving such great responsibility. But

“Fools rush in where angels fear to tread.”

The following remarks, taken from the *Commercial-Gazette*, of Cincinnati, are to the point, and worthy of attention. Their author, Prof. Wright, is high authority.

#### “A LEGAL SAFEGUARD IN THE DANCE OF DEATH.

“To the Editor of The Commercial Gazette:

“It may not be known to all your readers that Ohio enacted the first law for the regulation of the practice of dental surgery, and that neighboring States, after spending some time in sneering at her, followed her example. Fifteen States now have ‘State Boards of Dental Examiners.’ There is, however, an evil of a very serious character not sufficiently under the control of the State Boards, and Ohio is again first to recognize it, or rather to make a real effort of *doing* something toward correcting it. The medical and dental professions have long been aware that many entirely unqualified and ignorant men are daily administering ‘laughing gas,’ ‘vitalized air,’ ‘ether,’ etc., for the extraction of teeth, and have wondered that fatal accidents have not oftener occurred in the dentist’s chair. It is well known that many who ‘give gas’ are entirely ignorant of the effects of the agent on the heart, the blood-vessels, the lungs, the brain, or the nerves of the patient; as, also, of even the names of restorative agents and means, should the patient refuse to wake up promptly. Many good people have gone directly from the dentist’s chair to ‘mansions in the skies,’ without having left any ‘last words’ to their friends. Thousands of others have hung by a hair over their graves, and like Rogue Riderhood have come back to life, not, however, to ‘have the law on it,’ but to laugh and cry a little hysterically, and then to write their names in a big book, as an evidence that they have escaped death. Hundreds of these have ‘never felt quite well’ since. Every cultivated physician and dentist knows that Death stands grinning at his side (as in Holbein’s picture), when his patient’s consciousness is passing away under the effects of any anæsthetic, and only the ignorant dentist can be reckless and perfectly fearless at such a time. The people have a right to demand that every man who proposes to use an anæsthetic should be able to furnish them with some evidence that he has given special study to the subject. The Mad River Valley Dental Society appointed a committee on the 22d of May at their meeting in Dayton, to urge this matter on the attention of other dental societies of the State, on the people, and on the Legislature, with a view to the getting of a new law on the subject—a law which shall simply make it obligatory for any person who wishes to give anæsthetics, to satisfy by an examination, or by any other means, the State Board, of his special knowledge and qualification on this point. This will be a

move in the right direction, and will do doubt be appreciated by the public and by the medical and dental professions in other States.

"Respectfully yours,

C. M. WRIGHT."

If dentists generally would try to have the above remarks of Prof. Wright inserted in their local papers, great good would result in the way of educating the public on this important subject.

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### MADRIVER VALLEY SOCIETY.

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THIS vigorous association held its second meeting after its recent re-organization in the parlors of the Philips House, in Dayton, Ohio. The President, Dr. A. Berry, was in the Chair, with Dr. W. H. Sillito in his place as Secretary.

The subjects for discussion previously adopted, are as follows:

1.—Prosthetic Dentistry, with Special Reference to Restoration of Features. Essayists: C. Bradley, E. F. Sample, Dayton.

2.—The Restoration of Crowns upon Natural Roots. Essayists: A. T. Whiteside, Dayton; C. I. Keely, Hamilton.

3.—Treatment of Irregularities; and the Proper Antagonisms of Natural and Artificial Teeth. Essayists: Geo. W. Keely, Oxford; R. Corson, Middletown.

4.—What Should be Done Further to Protect the Public from the Increasing Empiricism Practiced in Our Larger Cities. Essayists: J. Taft, C. M. Wright, Cincinnati.

When the Chair announced discussion on the first topic in order, it was found that neither of the essayists was present, and on motion it was passed for the present, and the second one was taken up, viz.: "The Restoration of Crowns upon Natural Roots." The discussion was opened by Dr. C. M. WRIGHT. He regarded this as, perhaps, one of the most important operations known to dentistry. To successfully restore porcelain or other crowns upon the remaining natural roots requires not only manipulative skill of a high order, but it brings into full play our knowledge of special pathology, therapeutics, and materia medica. He was glad to find an increasing interest in this operation on the part of the profession, and he felt personally grateful to the inventor who gives us a superior method for its proper performance. He regarded Dr. How as such an inventor, and thought his system was of the highest value and utility to us. If



we can save the roots, which are sometimes three-quarters of an inch long, or more, and the alveolar processes of decayed teeth, and can by any method restore the crown to usefulness and beauty, we are doing very much in the direction of conservative dental surgery.

Although thousands upon thousands of people were going to and fro in the world, with the roofs of their mouths—their hard palates—covered with rubber or metal, and not complaining, he thought it could be proved by good physiologists that a part of the great function of digestion is, in a measure, interfered with. The tongue is the great organ of taste, but the most exquisite sensation is produced only just before deglutition; and after insalivation the tongue presses the morsel of food against the hard palate, and this seems to be essential to the perfection of taste. Now taste for food is a physiological necessity, and if it is impaired, he thought we did not need to go far to prove that the process of nutrition is, to a certain extent, crippled. He thought it possible that much of the dyspepsia in the world is caused by a want of proper taste and insalivation of our daily bread.

He would admit that *life* can be sustained by artificial means, that we could keep a man tolerably chipper by forcing food into him through a syringe or tin tube; but the highest health, he maintained, demands that all the functions shall perform according to their original designs. He did not think it was the original design that meat, and bread, and fruits should be switched about the oral cavity with the tongue, punched and indented slightly by porcelain teeth, squeezed up against a rubber palate and swallowed. And if all this is so, he said the man who helps us to save roots and crowns, and to dispense with false palates, is a benefactor to his race; and the dentist who exerts himself the most in this conservative surgery, is the best dentist, and is doing the most good, and has the highest idea of his work.

DR. J. TART said that though the profession is waking up to the importance of this class of operations, it is worthy of still greater attention. He thought it was a rare thing now for a reputable dentist to extract good roots. He regarded it a crime to extract useful roots; for a root with an artificial crown properly adapted to it will last as long as a natural crown on a tooth whose pulp is devitalized. He could see nothing to prevent their lasting five, ten, or even twenty years. He called attention to the phys-

iological fact, that a root with an artificial crown on it, will remain healthy a longer time on account of the pressure to which it is subjected in mastication. He said all were aware that when teeth are not used in mastication they become loosened in their sockets.

He said there were various methods of attaching artificial crowns, and all are more or less valuable. He advised the members to each try all the modes, and after becoming familiar with all, they could intelligently select the one best adapted to any case on hand. Men, he said, are not alike. The method best for one, may not be the best for another. He thought it a poor plan to wait till others decide for us; for by doing so we are always "behind the times." Some operators had taken up with the Richmond crowns when first introduced, and still adhered to them in preference to any of the newer modes; and especially is this the case in treating the roots of bicuspid and molars.

For roots of front teeth porcelain crowns were very generally preferred, as few liked the looks of a gold crown in front. He expressed himself as not fully satisfied with Dr. How's crown, or with his mode of adapting it, though he thought it probable he would like them better on further trial. The mode of attachment, he said, must be very carefully attended to. Sometimes the amalgam separates, and the crown is loosened. He regarded the Bonwill crown as generally too frail. The Richmond crown, the band, pivot, screw, etc., are all available and useful; and he would advise anyone to use whatever method will best meet the case in hand when it is presented.

He attached great importance to the physiological principle that when a tooth is not used in mastication its periosteum degenerates. The tooth is apt to become sore, and elongated, and sometimes suppuration supervenes—all these disastrous results may occur simply from want of use. He had seen such roots restored to comparative health and crowns put on them with good results. Five years ago he had put crowns on the roots of two molars; and after these five years of exercise, he finds them much improved in health. These were just such roots as he had formerly extracted, as a uniform practice. He regarded this as a very important line of practice; for it was no light matter to lose a tooth.

He had just one thought to offer in reference to Dr. Wright's

remarks about the sense of taste. If taste be so very important—and he so regarded it—is it not highly improper to vitiate it by the use of stimulants, narcotics, etc.? He would offer this thought for what it is worth.

DR. SAMPLE said that while not long familiar with the grafting of crowns on natural roots, he had been in the habit of saving roots whenever practicable, and had often persuaded patients to let him dress down and fill the roots even when he was putting plates over them, using plain teeth in such cases, and setting them on the roots, letting the heel of the tooth project over the plate and rest on the root.

DR. ADAMS said he had successfully used Bonwill's crowns, and had also contrived one of his own, which he had got Dr. Satterthwaite to make for him. He made it with a hole through it, countersunk at both ends, then he put a gold tube through it, and had built around the pivot with amalgam. A specimen thus made, had done good service for four years.

DR. WRIGHT, by request, described Dr. How's method of adapting crowns, which we did not note as Dr. H. is giving his plan, in full, through the press. He also told of a lady in Europe wearing artificial front teeth, for fifteen years, strips of platinum being soldered to the pins, these strips wrapped with cotton, dipped into shellac varnish and inserted into the canals in the roots.

DR. MORRIS had inserted a gold tube in the root attaching a gold pivot fitting it to the tooth, and a tooth thus mounted could be removed for treatment, if necessary, and readily replaced. Some had spoken of a gold band around the neck of the tooth. He feared that the band would destroy the vitality of the periosteum, and he asked if a root thus diseased was not dangerous to the system.

DR. BERRY said any plan was more or less subject to disaster. We could not always have healthy roots. He advised caution in such operations. He said it was remarkable how well the membrane at the neck of the tooth will tolerate a band pressed under the margin of the gum. But he regarded the mode of Dr. How as a great advance on all before it.

DR. TAFT, in answer to the question of Dr. Morris, said the end of the root canal should be filled. He would not make provision for after-draining. He said the band would be tolerated



as well as the root, and better, if the margins of the root were rough. He would have the band ready, made from 23 carat gold, then he would take a small steel screw, such as is used by cabinet-makers, and he would insert this strongly into the prepared canal, with a screw-driver. In the process, after all things are ready, he would put on the band, then the rubber, next insert the screw, then fill the band around the screw with oxyphosphate, and cover with soft wax. Three days afterward he would cut out the oxyphosphate and build in gold, making a gold crown thus for bicuspsids and molars especially. On the patient's return he believed he could extract the root by taking hold of the screw, though he had not yet needed to extract any. In Dr. How's method the pin in the root had a screw thread cut its entire length, the tooth has four longish pins, with a perpendicular groove between them. After the screw is properly inserted, and the tooth adjusted, the pins are bent toward each other so as to hug the screw, and the pins were covered with amalgam, oxyphosphate, or cohesive gold. The leading objection to this method, he said, is the great length of time it takes.

Dr. Berry said a gold crown even for a front tooth, did not make a very bad appearance. And to confirm his statement he humorously described his putting one on a rubber plate for a lively widow who told him she wished it for the purpose of catching a young man.

Dr. Taft described a mode of setting a plate tooth on a central incisor root. He filed out the front part of a well-fitted gold band, so that all in front was concealed by the free margin of the gum, and then built in the band and over the pins posteriorly to the tooth, giving it the desired shape.

Drs. Watt and Wright each added a few remarks mainly as to the importance of having roots healthy when artificial crowns are to be set on them.

And the Society adjourned until 2 o'clock.

#### AFTERNOON SESSION.

Called to order promptly by the President, and Dr. Watt, as ordered before adjournment, read a volunteer essay, entitled "HELPS IN STUDY," which is found among the contributions to the present number of the JOURNAL.



On the President calling for remarks on the paper,

DR. TAFT said that after twenty or thirty years working with the microscope as time and opportunity would allow, he had rather lost confidence as to the reliability of positive declarations made from its revelations, especially when high powers are used. All who use the instrument, he said, should begin their observations perfectly free from prejudice. New experimenters, he thought, were often too confident. To illustrate, Heitzmann tells us that it took him fifteen years to learn that which is now obvious and plain—fifteen years to learn how to use the instrument so as to gain correct information in certain directions. This he said, seems discouraging. And the higher the power the greater and more numerous are the difficulties to be overcome—the management of light, by condensers and reflectors, etc.

To illustrate the fact that such difficulties occur, he told us that Heitzmann had been criticised, and even contradicted by one of his own pupils, and that the pupil is sustained in his position by the independent observations of Professor Stowell, and perhaps others.

He said further, that he had a specimen prepared by Dr. Miller, of Berlin, intended to show the micro-organisms in decay of a tooth. (He did not tell us which variety of decay, and it is probable it could not be told by the preparation, but of course Dr. M. could tell by the tooth, and should have, and may have done so, in order to make the specimen fully instructive—REPORTER.) In the tubuli, beyond the line of decay, two little points or specks were observable, but it could not be made out certainly by the microscope that they are organic. In the staining of the specimen, the contents or lining of the tubuli may have been changed in texture and appearance, and this remark, he said, would apply to all the so-called and real demonstrations in this direction.

DR. WRIGHT expressed himself as well pleased with the paper. Had the author spoken disrespectfully of microscopic research, he would have taken direct issue, but as he understood it, the paper gave it full credit for all that is in it. As to Dr. Miller, he said he had enjoyed the pleasure of listening to his lectures before the American Dental Society of Europe, and it was a great mistake, made by some, when they ranked him with Lieber and Rottenstein, on the subject of dental caries. As he understood him he was clearly on the side of the chemical theory of decay, giving,

however, as all thoughtful men do, full credit to the modifying influences of the various micro-organisms as secondary agencies.

DR. TAFT said that in many specimens of decay these organisms are not observable. He regarded them altogether as secondary in their influence. If, as claimed, they can and do penetrate normal dentine, and are the true cause of dental caries, why do we fill to arrest decay? Why shut in the cause of the mischief? (A voice said, And why can't they crawl in beside the plug?)

There being no further remarks on the paper, the President called for the first subject of the programme, which had been postponed on account of the absence of the essayists.

“Prosthetic Denistry, with Special Reference to Restoration of Features.”

DR. SAMPLE opened the subject by reading the synopsis of a paper, interspersing extempore remarks as they seemed called for. As Dr. S promised to write out the paper for publication, we shall not try to give an abridgement of it.

DR. WRIGHT said the paper and remarks of Dr. S. had covered the ground so thoroughly that he felt but little more need be said now. He would recommend students and young dentists to carve teeth; and older ones to carve jaws and faces, by way of impressing on their minds the forms and characters of these organs. Many times it is impossible to fully restore the face by one set of teeth, the muscles can be forced to their original forms and positions only by degrees. Often the full effect of shortening and thickening certain muscles is not understood.

DR. BRADLEY said that with the artificial teeth in the market, we cannot do as well as we wish. He could not give full satisfaction in this direction except with continuous gum work. We cannot get the manufacturers to make the teeth we desire.

DR. SAMPLE inquired about some English teeth he had seen.

DR. TAFT said they were of Ash's manufacture, and though not as strong as the best American teeth, they could be polished so as to present a surface like a natural tooth. He went on to say that it was very important to prevent, as much as possible, the shrinking of the features, so as to lessen the amount of restoration required. This we can do when we have full control of the patient by inserting artificial teeth immediately after extraction. And if teeth a little larger, rather than smaller were used, the effect was all the better. This mode also prevented, to some ex-

tent, the impairment of voice, incident to the loss of the teeth; and the patient learned to use them sooner and better. He said patients, in general, do not use their artificial teeth either as constantly or as vigorously as they should. Any good set of artificial teeth well made ought to be used enough to be worn out in from three to seven years.

DR. HUBBARD regarded early insertion as very important, especially with young people. The irregularities on the models, instead of being objectionable, he regarded as an advantage.

He always tried to have the teeth correspond with the patient, and if we wish to preserve and retain the natural features, we must insert early.

This subject was passed, and in a brief period devoted to miscellaneous business, Dr. C. I. Keely exhibited a plaster model showing defective dentition. The temporary teeth had not all made their appearance, though the patient is ten or twelve years old, and but few permanent ones yet appear, and they are diminutive in size and defective in shape. He wanted advice, and the general idea seemed to be that he would better wait for developments, the only indications being to take care of the health of the child.

The third subject of the programme was taken up as follows:

“Treatment of Irregularities; and the Proper Antagonisms of Natural and Artificial Teeth.”

DR. WATT said he would make only one or two remarks, and these would be general rather than practical. A few years ago, a young dentist asked his advice. He had attempted to rotate a central incisor on its axis, and the tooth had become very much loosened, and had remained so. As the patient was a young lady he was greatly concerned. He expressed the opinion confidently that he had not applied as strong pressure as he had often done before in changing the position of a tooth. The lady lost the tooth eventually. The trouble in this case was a failure to understand the nature of his operation. In pressing a tooth latterly, or outward or inward, a large portion of the periosteum is but little disturbed, and this sustains vitality. But in rotating, every fibre of the periosteum is under pressure. When this is understood we will recognize the necessity of more gentle pressure, as well as the necessity of rest. Slight rotation should be made, and

the tooth should be firmly held in its new position till the surrounding tissues have almost regained their normal condition. Then apply further pressure, and rest again, if necessary ; and this principle of pressure and rest should be observed in every effort to change the positions of living organs ; but it is far more important in rotating than in mere pushing or pulling. As to antagonizing, he would advise all, and especially the younger brethren, to study the antagonisms of the natural teeth of well formed mouths of persons having regular features. More can be learned by a few examinations, in this way, than can be gained from all the talking we can do here in a day.

DR. HUBBARD said using but one side of the mouth is very objectionable, and spoils the antagonisms of both natural and artificial teeth. He would strongly confirm the principle of pressure and rest, as referred to by Dr. Watt. He had not understood the importance of this a few years ago as he does now.

Artificial teeth should antagonize like well developed and arranged natural teeth, so as to lock into each other and thus grind the food instead of bruising it. He often left the bicuspsids slightly too long at first, so as to secure pressure at the sides of the mouth, and after a short time he touched them to the wheel, and improved the antagonism.

DR. WRIGHT asked if he looked sick. The symptoms indicated that he was either very sick or remarkable well. It was a common thing for him to disagree with and criticise almost everything he heard ; but to-day he cordially agreed with almost everything said. Had he been dyspeptic and melancholy before, and had now recovered ? or did the present symptoms indicate a softening of the brain ?

DR. TAFT said that in antagonizing teeth, it was a good plan to have the bevels of the upper and lower teeth to strike so as to draw the plate backward. This was specially applicable to adapting upper artificial to natural lower teeth.

The fourth subject of the programme was called, and is as follows :

“What Should be done Further to Protect the Public from the Increasing Empiricism Practiced in our Larger Cities ?”

The essayists were both present and both read papers, which



we lay before our readers, in the shape of the essays of Drs. Wright and Taft.

Thinking that these papers would be well understood without the discussions on them, and feeling fatigued and lazy, we rested, and we enjoyed our rest so well that we reported no further. Let us say that the evening session was well attended, full of interest, and as well worth reporting as the rest of the meeting. Dr. Pease read a paper which we did not get.

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## Societies.

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"Wherewith one may edify another."

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### AMERICAN DENTAL ASSOCIATION.

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THE twenty-third annual meeting of the AMERICAN DENTAL ASSOCIATION will be held at Niagara Falls, commencing Tuesday, August 7, 1883.

GEO. H. CUSHING,  
*Rec. Sec'y.*

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### PENNSYLVANIA STATE DENTAL SOCIETY.

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THIS Society will convene at CRESSON SPRINGS, on the main line of the P. R. R., July 31st, 1883, at 10 A. M., and will continue in session four days.

For further information, address W. H. FUNDERBURG,  
*Cor. Sec'y.*

330 Penn Avenue, Pittsburgh, Pa.

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### NOTICE TO STATE BOARDS OF DENTAL EXAMINERS.

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THERE will be held at the Cataract House, Niagara Falls, on Monday, August 6, 1883, at 2 o'clock, P. M., a meeting of all the State Boards of Dental Examiners, for the purpose of perfecting a National Association of Examining Boards.

It is hoped that every Board will be fully represented.

GEO. H. CUSHING,  
*Sec'y of Conference held at Lexington, Ky.*

Next to the coöperation and uniformity of procedure among the dental colleges, is, in the scale of importance, a similar state

among the State Examining Boards. This meeting is a step in the right direction; and we are glad to notice and call attention to it. It was provided for at a similar meeting held in Lexington, Kentucky, some time ago, which meeting was not reported by the JOURNAL, because, notwithstanding an effort which we thought would secure us an early account of the doings of the meeting, we failed to get an account of it till it was an old story, and hence we kept quiet. We hope every Board will be on hand ready for action.

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## Correspondence.

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"I charge you that this epistle be read."

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### A CORRECTION—A REMARK ABOUT THE DEVIL.

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Dear Dr. Watt :

MANY years ago I was lucky enough upon *one* occasion to be obliged to go to a bank on Third Street to draw one hundred dollars on a check for that amount. I was modest and timid then, and believed that hotel clerks and bank clerks were really a superior race of beings, and that only well known, and very influential business men, or particularly cheeky young fellows, ever dared to approach either one or the other, without some trepidation. My heart nearly always failed me, when necessity compelled me to ask a question of a hotel clerk, or to present a check for payment to the mighty bank clerk. In the former case I could not assure myself that I was not a nameless vagabond and tramp, and in the latter, I always wished I had my Sunday School teacher with me, to satisfy the banker that I was not the criminal I seemed. Well, after drawing the aforesaid \$100, I stepped aside in great relief, and *counted* the money. I had \$105 in my hand instead of \$100. Modestly, and with much fear and trembling, I waited my turn and said to the clerk: "I beg your pardon, sir, but you have made a mistake." "That's too thin, young fellow! We never correct mistakes. You musn't try that on here." Lord! how dignified and self-assured he was, and how withering his look; but unfortunately, when my progenitors put me together, while they mixed up a great many amiable and modest and sweet vir-

tues (all my friends know this), some way or other, about *one part* to three of the virtues, was pure Indian, and this one-fourth Indian portion has always been on the war path, and not always under control, even in the state of civilization in which I was unfortunate enough to be born. The sarcasm of the clerk just then aroused the Indian, and with a war-whoop that startled all the bank officers, I shook the *extra* "five" in his face, and reviled him, and would have tomahawked him on the spot, if he hadn't been in a cage. "Don't correct mistakes? you don't? Whoop! You puny, white-livered, cross-eyed, knock-kneed son of a mountain goat," etc., etc. Oh it was terribly ungentlemanly; but I was young. For twenty-five years I have had my Indian by the throat; and the remembrance of that scene has always made me careful about asking anybody to correct a mistake; but when the OHIO STATE JOURNAL permits the printers' devil to spoil my *Latin*, why, I don't see any other way but to beg you, my dear doctor, to correct it. I'll admit that I am rather weak in the noble old tongue, but I'm sure I wrote "*tactus eruditus*," in my paper on "Babes in the Woods," when referring to the skill and knowledge and cultivated touch of the dentist, instead of "*tactus crudetus*," as printed. Is the devil a wag? and did he intend this as a joke? He might have said "*crudelis*" more appropriately, but I didn't write or mean that. Then in a list of the titles pertaining to our calling, if one of them could be D. M. D., instead of the repetition of "M. D. S." (the title I believe created by the State Board of Examiners of New York), it would read better. Will you kindly give me credit for the correction? Yours truly,

C. M. WRIGHT.

[Certainly will give credit for the corrections. But this time we take the side of the devil (printers', of course), for in writing, Professor Wright's pen does not always touch the paper in the *tactus eruditus* style.—ED. JOURNAL.]

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## APOLOGY.

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WE find it difficult to make our copy and the JOURNAL come out even. We must ask Book Publishers to bear with us. The matter overruns, and it seems nothing can! be conveniently left over but our book notices.

# OHIO STATE JOURNAL

—OF—  
DENTAL SCIENCE.

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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### THE ORIGIN AND GROWTH OF TEETH.

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[An Inaugural Thesis submitted to the Trustees and Faculty of the Ohio College of Dental Surgery for the Degree of Doctor of Dental Surgery, February 26, 1883.]

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BY SALLIE STRASBURG, CINCINNATI, O.

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IN conformity with the custom requiring a thesis from candidates for graduation, I have prepared a paper, having for its subject the Origin and Growth of the Teeth.

Before I begin with my theme proper, being fully imbued with the seriousness of the subject, I pray, like that Homeric warrior, who, in the midst of battle, sent his oration to the Heathen Deity Jupiter that he send sunlight, so he be not compelled to fight in darkness. I likewise pray, may the light of science shine upon my path and enlighten me sufficiently to do justice to my subject.

I propose arranging the paper under the following heads:

- I. Mucous Membrane.
- II. Development of Enamel Organ.
- III. Development of Dental Bulb.
- IV. Development of Follicular Wall.
- V. Origin of Permanent Teeth.



## MUCOUS MEMBRANES.

These membranes line internal passages and other cavities which open on the surface of the body as well as various recesses, sinuses and gland ducts, which open into such passages. They are habitually subject to the contact of foreign substances, introduced into the body, or of various excreted or secreted matter, and hence their surface is covered over and protected by mucous.

In structure these membranes are composed of three layers, the basement membrane, from which growth and metamorphosis take place, externally, to form epidermis, while the same process takes place internally to form the dermis.

To avoid confusion, I will, throughout this paper, follow Dean's classification of the layers composing the mucous membrane as being the most simple and applicable to the skin as well as to the mucous membrane :

Epidermis,	{	Corneous.
	{	Malpighian.
Basement.		
Dermis,	{	Papillary.
	{	Reticullary.
Subdermis.		

The external layer or *stratum corneum*, of the mucous membrane, unlike that of the skin, is permeable by various kinds of liquids, which, after passing through the epidermis and basement membrane, may be absorbed by vessels of the dermis.

The malpighian layer, which has larger oval nuclei and is destitute of a cell wall, constitutes the peripheral portion of the enamel organ which, during the course of development, will be known as the enamel membrane.

The basement membrane is of particular interest to the dentist, since the dentine bulb and enamel organ will be found on opposite sides of it. In this situation it constitutes the *membrana præformativa*.—*Rashkow*.

The epidermal membrane, or epithelium, plays the most important part in the development of the teeth. The elements are derived from the external germinal layer—the corneous leaf or plate, (Remak) or the epiblasts, the present accepted term. They are developed earlier in embryonal life than the mesoblasts of the intermediate layer, from which the dermis originates.

Prof. Wedl designates the mucous membrane an epithelial structure, and calls the enamel organ a follicle of mucous cells.

Dieser Schleinzellen-Schlauch wurde von Kolliker als Schmelzkeim bezeichnet.

It is known that at an early period of embryonal life, the maxillary arch of the lower jaw is destitute of the least trace of osseous tissue, but incloses within its component elements a symmetrical, cartilaginous band, which unites with its fellow at the median line; it not only extends the entire length of the maxillary arch, but to the frame of the tympanum, and terminates in the malleus.

This is Meckel's Cartilage, an organ which was first noticed and described in 1820, by the German anatomist whose name it bears. While playing only a transitory part in the development of the maxilla, it gives form and stability to the lower jaw. At the same period of evolution, the maxillary bourgeon of the upper jaw has united with the median, or inter-maxillary bourgeon.

This phenomenon takes place about the fortieth or forty-fifth day. We soon observe in the rounded part of the maxillary arch a bed of epithelial cells, forming a smooth ridge, which will afterward constitute the alveolar border. This epithelial ridge is added to the embryonal elements before they include any other tissue, except it be vessels, nerves, or muscle fibre, in process of evolution. Beneath this ridge a projection sinks into the subjacent elements, the outlines of which are in the shape of the letter V, with the apex slightly inclined toward the inner side. This structure was, for a long time, supposed to be cartilaginous in its nature, and was called *cartilago dentalis*, until Rashkow discovered its epithelial character.

Guillof in 1859 named it the odontogenic part, or the generating part of the teeth. This process forms a continuous epithelial band the entire length of the alveolar border, and is found in parts that remain devoid of teeth as in the bar of solipeds.

"In 1839 there existed a wide-spread belief that rudimentary incisor teeth may be found in the embryonal jaws of ruminants. The theory was promulgated by Goodsir. This statement, founded upon certain anatomical appearances, was seized upon by Darwin, Haeckel, and other scientists, to sustain their views regarding changes that had taken place in successive generations of animal beings. This theory then received additional credit

and fresh impulse, until it became the prevailing belief that the upper jaws of the foetus of ruminants contain germs of teeth, which, however, disappear before, or soon after the birth of the animal."

This theory of Goodsir has been severely shaken by the researches of Dr. Pietkiewicz.

The epithelial band is simply a prolongation of the epithelial tegumentary layer of the mouth, which, sinking into the embryonic tissue of the jaw, forms for itself a groove which it exactly fills. The band is composed of the same histological elements as the epithelial coat, or oral mucous membrane.

If the jaw is subjected to a prolonged maceration the band will become detached, but at no period of embryonal life can there be found a depression, sinking, or perforation of the surface of the alveolar border, when in a normal condition.

The well-known theory of the evolution of the teeth advanced by Goodsir in 1837, and afterwards adopted by most authors, was founded on a certain mechanism which consisted in the formation of a follicular sac at the expense of an exterior depression of the oral mucous membrane, but as there is nothing in the normal state to warrant any such conclusion, the theory of Goodsir is considered without foundation. For a long time the theory of Goodsir was held to be correct, his verbal and pictorial representations were copied into our text books, both medical and dental. Even Kolliker borrowed from this author cuts illustrating this stage of evolution. Goodsir believed at an early period of foetal life there appears a continuous open groove running around the whole circumference of the jaw; and from the bottom of this groove there arose isolated papillae, corresponding in number to the milk teeth. These papillae become covered in by the deepening of the groove, and a meeting of its two edges over their tops, whilst, at the same time, their transverse septa are being formed, so that the several papillae become enclosed in their separate follicles.

"This theory of Goodsir was attacked, at a later date, in the works of the French histologists Guillot, Magitot and Robin. According to the latter the tooth sacs or dental germs and remaining parts are developed, in the first instance, within the sub-mucous connective tissue, or sub-dermis, quite independent of epithelium or mucosus."—*Frey*.

## THE EPITHELIAL LAMINA AND THE GENESIS OF THE ENAMEL ORGAN.

As soon as the epithelial band is completed it presents two faces, an external and internal. From the latter a process is given off which forms the epithelial lamina. This lamina is a continuous process extending the entire length of the epithelial band. It appears to be an inflexion of the band itself. The elements of the lamina are the same as those found in the band, polygonal cells inclosed by a layer of prismatic cells.

The first trace of the dental follicle originates from points on the free extremity of the lamina. They show themselves as small tubercles on the free margin of the lamina, arranged at intervals corresponding in number and situation to the teeth that will be developed in the first dentition. These protuberances are the primitive bourgeons of the follicles. This bourgeon retains its connection with the lamina by means of a slender cord which gradually lengthens as the terminal mass increases in dimensions.

During the course of development this bourgeon constitutes the enamel organ, while the neck, in its progressive lengthening, only serves as a temporary band uniting it to the lamina.

The first appearance of the primitive bourgeon is spherical, composed of an external layer of prismatic cells (continuation of the lamina) inclosing a mass of polygonal cells. During the progress of evolution the elements inclosed in the prismatic investment undergo modification, and are transformed into stellate bodies, a phenomenon that never occurs in the cells of the cord or lamina. The difference in size of these cells and the change they experience seem sufficient to establish from this period a clear distinction between the constitution of the lamina and that of the bourgeon, which emanates from it. While the elements of the bourgeon undergo a series of important changes, those of the lamina retain their original appearance. The primitive bourgeon, which was at first spherical, becomes somewhat cylindrical, continuing in a horizontal direction, until considerably lengthened, when, by an abrupt inflection, it takes a verticic direction, and sinks into the depth of the jaw. The bourgeon thus extending its course, the cord requires a length which varies according to the species of animal, besides undergoing secondary inflections.

The primitive cord, in the course of its progress, presents the phenomena of lateral buddings in the shape of small rounded



nodules, and shortly the form of varicosities which in their arrangement resemble an irregular chain. The bodies are composed exclusively of polyhedral cells, analogous to those contained in the cord itself. It is from these masses that, at a later period, numerous epithelial prolongations spring. After the cord has changed its course from a horizontal to a vertical direction, its extremity has become somewhat club-shaped, and still acquires greater dimensions. This results from a multiplication of the polyhedral cells, which compose most of its mass, and the prismatic cells that form the surrounding layer. The epithelial body thus occupying the deeper tissue of the jaw, becomes somewhat spherical in form. The upper portion corresponds to the point of connection with the cord, while the lower portion points toward the bottom of the lower jaw. This mass represents the *enamel organ* fully developed.

Shortly the lower portion takes the form of a concavity at its lower extremity. The mass then assumes a shape resembling a hood, but still retaining its connection with the cord. This change of form coincides with the appearance of a new organ, the *dentine bulb*.

This originates at the inferior portion of the enamel organ. It first appears as an opaque point, but soon assumes a conical form, while its summit produces and occupies the corresponding depression in the enamel organ. This adaptation of the two organs continues throughout all their subsequent phases, the enamel organ covering the bulb, and exactly fitting its contours. No connection of tissue, however, exists at any stage of development. This has been proven beyond a doubt by dissections, maceration in coagulating liquids, and examination of sections.

This juxtaposition ceases at the base of the bulb, where the enamel organ turns back upon itself with a rounded border.

The composition of the enamel organ at this stage of development, about the fifteenth week or fourth month, of the human embryo, has undergone notable modifications; the primitive polygonal cells, which composed the central mass, have been transformed into stellate bodies, which contain a nucleus in the centre surrounded by a granular mass.

The prismatic elements also undergo changes.

The stellate bodies occupy, at first, the centre of the enamel

organ, while those polygonal cells, near the periphery, gradually become stellate, as the dimensions of the organ increase.

These star-shaped bodies have their processes in the central part better defined than near the periphery where they appear only rudimentary. These elements are immersed in a translucent, amorphous mass, coagulable in acids, having the appearance and consistency of the white of an egg. This amorphous substance, little by little, interposes itself between the polygonal cells, destroying their mutual contact. The result is the change of the polygonal cells to the stellate form.

“This theory of transformation differs from that given by Kolliker, and other anatomists, who contend the primitive cells take the stellate form spontaneously. Legros and Magitot's opinion is in conformity with that of Waldeyer, who was the first to examine and describe this phenomenon; though Huxley, at a much earlier day, advanced the idea that the enamel organ had an epithelial origin, but did not indicate the *modus operandi* of the transformation of its elements, but said: the cells of the reticular portion were only metamorphosed epithelial cells. Formerly histologists believed these to be stellate connective tissue cells, but the peripheral layer was then, as now, admitted to be composed of epithelial cells.”

The prismatic elements, during the early stage of evolution, remain the same in character on all parts of the periphery; but as soon as the dentinal bulb begins to make its appearance, a change takes place.

The prismatic cells on the concave surface of the enamel organ become lengthened while those of the convex surface decrease in size. This becomes more apparent during the progress of follicular evolution. The cells on the external surface disappear entirely before the complete atrophy of the enamel pulp, while those on the internal surface still remain for the functions assigned to them, the formation of the enamel organ.

The cells of the concave face of the enamel organ experience changes in form, besides increasing in length. Their extremities directed toward the centre of the enamel organ form slender processes which unite, or are continuous with filaments from surrounding cells, which constitute the portion of the enamel organ known as the *stratum intermedium*.

"This stratum may be termed the stratum of Hannover, he being the discoverer.

Prof. Tones describes it thus: "The *stratum intermedium* consists of cells, intermediate in character, between those of the bordering epithelium and the stellate reticulum, they are branched but less conspicuously so than the stellate cells with which they are continuous on the one hand and on the other with the enamel cells. The function is questionable." Waldeyer believes that since the enamel cells may be frequently seen connected at their lower extremities with the cells of the stratum intermedium, a multiplication of enamel cells from the cells of this stratum in the direction of their length may be admitted to occur. This opinion is shared by Hertz and Hannover."

#### DENTINE BULB AND FOLLICULAR WALL.

I have previously mentioned that the enamel organ soon loses its spherical form and acquires that of a hood or cap, corresponding with the period of the appearance of the dentinal bulb. It first appears as a small opaque point in the embryonic tissue of the jaw, which corresponds in position to the depression in the enamel organ. "From the pouch-like expansion of the enamel germ, which upon its periphery is covered by the cells of the mucous layer, and in its central portions is occupied by extremely delicate nucleated elementary organs, rises a papilliform process of connective substance. This is the primary stage of the *dentinal germ*, and appears as a single papilla when it represents an incisor or canine tooth, and an elevation with several cusp-like processes, when it represents a deciduous molar."—*Prof. Carl Wedl*.

At this early stage of development a vascular loop enters its substance similar to those found in the skin, but nerve fibres have not been discovered until it has attained a mammillated form. The bulb retains this form but a brief period,—it soon shows a tendency to take that of the future tooth. For the incisors and canines it assumes a conical form; for the molars, in man and carnivora, it is soon covered with protuberances, equal in number to the cusps of the future crown, whilst in the herbivora and rodents it throws out prolongations which represent the future divisions of the crown. In all these circumstances the enamel organ allows itself, so to speak, to be molded by the dentinal bulb, so as to exactly conform to whatever shape the latter may assume.

Dr. Magitot maintains that the enamel organ is endowed with this influence.

These are his words: "The development of the dental bulb which makes its appearance subsequently to the cord, is dependent as a physiological consequence, upon the presence and form of the enamel organ itself. One will, nevertheless, be tempted to believe that the nature of the future tooth is under control of the dentine papilla, a kind of organic mold upon which the calcific elements are grouped; but it must be remembered that the epithelial cord, which represents the future enamel organ, always precedes the appearance of the dentine papilla, which never originates till the cord has advanced a certain distance in its course. Accordingly, we believe that the epithelial cord not only decides the place of genesis, but the form of the corresponding tooth."

Dursy, according to Waldeyer, says: "The first germ of dentine appears in a dental sacculus, as a dark semilunar area at the bottom of the dental groove or enamel organ. At the same time, and continuous with the enamel, the dentine germ is developed along each half of the jaw. At certain points corresponding to the position of the future teeth, the young structure develops in the form of papillae, projecting against the enamel germ, while the remainder atrophies."

According to the teachings of Dursy, a dentine germ might be developed from any point of this semilunar area, which should be reached by the enamel organ. No particular point is assigned to the development of the dentine germ, that is entirely accidental and depends upon the course the enamel organ takes.

For example: If the epithelial cord of a cuspid should deviate from its normal course, so as to come in contact with this dentinal sheet of tissue, at a point between the bicuspid, the cuspid would be developed between these two teeth. Whatever point in this tissue the enamel organ should reach, the future tooth would be a true cuspid. If this be admitted, the theory of Dr. Magitot must be true, that the enamel organ determines the form and character of the future tooth. If the teeth of certain fishes are destitute of enamel, Magitot's and Dursy's theory would be overthrown. The statement is from high authority that all teeth, whether clothed with enamel or not, are in the formative stage universally endowed with enamel organs. We may infer from such cases that the primitive enamel organ has performed



its function when it has incited the development of the dentine germ, and determined its future form and character.

There is a peculiarity in the structure of the external surface of the dental bulb; if a vertical section be made of the bulb, there will be found at the periphery a thin, clear zone, distinguishable from the subjacent tissue. Various anatomists have assigned important functions to this zone, it is a stratum of amorphous material, entirely devoid of anatomical elements and granulations. The stratum being transparent and somewhat denser than the subjacent tissue of the bulb, can at times be detached from the surface of the bulb. This fact led anatomists to believe that the bulb was invested by a distinct membrane." *Membrana performativa* of Rashkow.

It is in this structureless layer that the ivory cells or odontoblasts make their first appearance.

When the papilla has taken a hemispheric form, two opaque processes, originating at its base, ascend divergently upon its sides. They represent the first trace of the sac of the future follicle. At this period the processes are composed of the same elements as the bulb. While the bulb is developing, the processes increase in length, and bend toward each other in such a way as to finally embrace the dental bulb and enamel organ. By the gradual upward growth of these processes, the latter organs become finally enclosed and isolated.

Prof. Tomes, in his *Dental Anatomy*, says: "From the base of the dentine bulb prolongations pass outward and slightly upward, so that they, in a measure, embrace the free edge of the enamel organ; and at a somewhat later period they grow upward till they fairly embrace the whole enamel organ."

Owen's *Odontography* tells us: "By the development of three or four lamellar processes, from opposite sides of the mouth of the follicle, and their mutual cohesion, the papilla is inclosed in a capsule."

Prof. Wedl, in his *Pathology of the Teeth*, says: "The dental germ proceeds from the floor of the dental sac which invests it and the enamel organ."

Kolliker says: "The dentine papilla arises from the bottom of the dental sac."

Although the last two authors do not describe the process of development, they certainly do not mean that the bulb arises from

the floor or bottom of a formed sac, but upon the surface of a sheet of tissue, which latter forms the sac.

Soon after the cord becomes severed by the absorption of its elements, resulting in a cessation of continuity due to the compression or strangulation it undergoes from the encroaching walls, which now unite at this point and completely enclose the follicle. The enamel organ having lost its connection with the epithelial lamina, the dentinal follicle is definitely completed.

The wall or sac, composed in its primitive stage of embryoplastic elements, gradually assumes that of a laminated membrane, which may be separated from the adjacent tissue, except at the base of the bulb, to which it is firmly fixed.

Kolliker and most authors describe the sac composed of two concentric lamina, and also admit, with Huxley, that the transparent stratum which clothes the bulb reflects back on itself and lines the inner surface of the follicular wall.

At the period now arrived the follicle is completed and closed. It is composed, beginning from the outside inward, of the follicular wall, enamel organ, and dentine bulb, and no other substance finds place within these walls. The enamel organ fills all the space between the sac and the bulb, and terminates at the base of the sac in a rounded extremity which forms the division between the prismatic cells of its convex and concave surfaces.

While the cells of the concave surface are now called upon to perform their physiological function those of the convex surface atrophy rapidly and disappear.

“Waldeyer and Hertz believe this external layer of the enamel organ, instead of being absorbed, to finally become the *cuticula dentis*.”—*Nasmyth's Membrane*.

If the crown of a tooth be subjected to the action of hydrochloric acid for about 24 hours the delicate membrane first observed by Nasmyth will be detached. The membrane is smooth upon its exposed surface; while the internal surface is connected with the enamel fibres between the rows of which it sends processes, and it presents in many places an impression as if it were of the contiguous portion of the rows of the enamel prisms.

According to Kolliker, the cuticle of the enamel is considered to originate in the following manner: that an additional coherent layer is secreted by the enamel cells, after the completion of the formation of the enamel, to serve as a protection for the whole.

Waldeyer regards it as the product of cornification of cells.

Prof. Tomes and Wedl hold the opinion, that the membrane belongs to the cement, because it is continuous from the crown upon the cement, as may be demonstrated on teeth which have been treated with hydrochloric acid. Moreover, the membrane is thickened in the depressions upon the crowns of molars, and in these localities distinct bone corpuscles likewise occur.

This constitution of the follicle, with these three fundamental parts, seems to be characteristic of man, and of all mammals whose teeth are not supplied with coronal cement.

But in the follicle of the soliped it will be seen that a long time before the formation of the first dentine cap, there exists, between the follicular wall and the organs within it, a new tissue differing in color, consistence, and composition. Upon this tissue will depend the formation of the cement.

This cemental organ which will always be found in the follicles of the molars of herbivorous animals, and in those of the incisors and molars of solipeds, has been described for the first time in France in a work by E. Magitot in 1858. It was presented anew some years later by Robin and Magitot in 1861. Since that time this organ seems not to have been recognized by any other anatomist.

In the last works published in Germany by Kolliker, Waldeyer, Hertz, Kollman, and others, its existence has been denied.

The dental follicle now has a general ovoid form. Its size varies greatly in different species of animals, and according to the kind of teeth to be developed from it. When the follicle is completely formed it remains inclosed within the embryonal tissue of the jaw, with which, at first, it is connected. Having lost its communication with the mucous membrane, by the rupture of the cord, it does not, as yet, form any connection with the maxillary bone. The formation of the alveolar partitions does not take place until a later period.

The network of vessels which ramify the follicular wall and dental bulb are furnished from the surrounding parts, while the enamel organ is non-vascular.

The direction of the great axis of the follicle in man, and the carnivora, is vertical, while in the herbivora it takes an oblique and divergent course, which is particularly marked in the follicles of the incisors, and which is in conformity with the inclination of

the alveolar arch for each species. As soon as the sac is closed and the follicle becomes isolated by the rupture of the cord, various changes take place in the embryonal tissues that surround this organ, located between the apex of follicle and the epithelial lamina and cord.

The cells composing the epithelial lamina become greatly increased in number at the severed point, resulting in irregular buddings, which meander in different courses into the deeper portions of the embryonal tissue. These buddings, differing in form, occasionally present that of cylinders, which retain their connection with the primitive lamina, but frequently this connection is absorbed and an epithelial mass is set free.

Occasionally clusters of these masses take the globular form, resembling those which have been discovered in the lamina itself. These different freaks of nature account for the various forms of these epithelial masses, which heretofore were unexplained, and which are found in all sections of the jaws, at this period of evolution, when they finally become absorbed and disappear, before the development of the tooth is completed.

Coincidentally with the absorption of the epithelial lamina, changes precisely analogous transpire in the severed cord. From the remnant of this cord processes are given off which, at times, become quite numerous, and remain for a considerable length of time, even up to a period verging on the eruptive stage. The form of the processes varies, occasionally having the appearance of a bouquet, which spreads and continues to expand, till it reaches the vicinity of the epidermis. At times they form numerous anastomoses, in the midst of which are found isolated masses. The tendency of these groups is toward the mucous membrane, and not in the direction of the lamina or the cord.

The remains of the cord and lamina are composed of the same polyhedral cells as the cord and lamina, but are never invested with a layer of prismatic cells. While this phenomenon of budding is taking place in the cord and lamina, a similar process is going on at the external surface of the follicular wall. The constituents of the follicular bourgeon are the same as those of the cord.

This sameness of structure results from the fact that these epithelial masses are derived from the remains of that portion of the cord which is in nearest proximity to the follicle, and which



by multiplying themselves, finally constitute the reticular covering of the follicle. All these phenomena of epithelial proliferation relate to one and the same process, all finally disappear by absorption, unless it be some masses that may become the *enamel organs* of supernumerary teeth.

Drs. Legros and Magitot maintained that the supernumerary teeth originate either from the epithelial lamina, from supernumerary buddings, arising between the normal number; or that they are off-shoots from the epithelial cord. In the first case the development of these teeth would be precisely similar to those of the deciduous teeth; in the other, to that of the permanent teeth, with the exception of the first molar.

Dr. Magitot has since modified his views; they are, at present, in accordance with those advanced by Kollman, and are based upon the well-known fact that when the epithelial cord or neck, which connects the enamel organ with the epithelial lamina becomes severed by the closure of the follicle, the cells of which the cord is composed multiply to a greater or less extent, at their severed extremities.

These epithelial proliferations occasionally continue adherent to the remains of the cord and to the follicle itself, until they are absorbed. Sometimes considerable masses become detached and assuming various forms, wander into the depths of the jaws. The epithelial proliferations, according to Kollman and Magitot, may become the enamel germs from which the supernumerary teeth originate.

Now, in order that such a tooth may be produced, a supernumerary dentine papilla must be provided for this adventitious enamel organ. This would result as a natural consequence if the theory advanced by M. S. Dean is correct. In a paper by Dr. Dean, it was maintained that dentine papilla may originate from any point of the dentinal sheet of tissue (as described by Dursy), with which the epithelial mass comes in contact; that it is solely through the influence of the enamel organ upon this tissue that development of the dentine papillæ is induced. If this be true, the origin of a supernumerary dentine papilla is readily accounted for, while otherwise, special papillæ must originate independently and coincidentally with the supernumerary enamel organ, a circumstance that does not come within the range of probabilities.

When the epithelial cord has finished its course it has brought

the primitive enamel organ to that point where its evolution will be completed, and immediately after the rupture of the cord the formation of the secondary follicle takes place. In the human embryo the remains of the cord of the primitive follicle may be found after the formation of the follicles of the permanent teeth; and it is likely that during the process of eruption these buddings become atrophied.

While the cord and lamina are undergoing modifications, the embryonic tissues in which the follicles are immersed also change their nature,—laminated elements appear, forming a loose and transparent network.

The osseous tissue of the jaw makes its first appearance at the base of the follicle, soon forming a horizontal layer, which separates the groove of the follicle from the canal reserved for the vessels and nerves. Lateral processes are then thrown out from this layer, or floor, and form the groove in which the follicles lie for some time without being separated by transverse partitions. But later, after the development of the crowns of the teeth, bony processes are thrown across this groove, forming cells for the lodgement of each follicle, with an opening toward the epithelial surface.

A vascular network of tissue surrounds each follicle, and ramifies the walls even to the surface of the enamel organ, but does not penetrate it. The vessels of the bulb are entirely distinct, forming no anastomosing connection with the plexus surrounding the follicular wall.

#### ORIGIN OF THE PERMANENT TEETH.

Goodsir held that the follicles of the permanent teeth arise from a fold of the sac of the primitive follicle. According to the more recent authors, the theory of Goodsir is erroneous in regard to the genesis of the teeth. Kolliker and Waldeyer have succeeded in illustrating that certain prolongations of the primitive cord are destined to become the secondary teeth.

Kollman writes: The cord of the permanent teeth arises from the remnants of the primitive cord, which after its rupture, produces those buddings or epithelial masses."

He believes that the enamel organ of the permanent tooth originates from a mass of those epithelial fragments. In a like manner he accounts for the production of the supernumerary teeth.

This new theory is equally erroneous ; for it is considered by various authors that Kollman has neglected to follow out strictly, in their successive physiological phases, the phenomena of this special evolution.

The origin of those permanent follicles that have been preceded by corresponding temporary ones, is altogether different from that of those which had no such predecessors. The twenty follicles of the permanent teeth that succeed the temporary ones have a like origin, while the twelve other follicles, (the molars of the adult), have a different mode of genesis.

The enamel organs of the permanent teeth, except those of the first molars, originate from the epithelial cords of other follicles, and not from the epithelial lamina.

The bourgeon for the follicles of the permanent tooth will be found at the point where the primitive cord merges into the enamel organ of the temporary tooth. The form of this bourgeon is cylindrical, terminating in an enlarged extremity resembling a gourd, at this stage of evolution. It takes a vertical direction, and passes between the osseous alveolar wall and the primitive follicle, along the internal or lingual face of the latter. The elements are the same as those of the primitive cord. The bourgeon is nothing more than a *diverticulum*, or outgrowth of the primitive cord. This bourgeon represents the beginning of the permanent tooth. It sinks to the bottom of the osseous dental groove, where it soon loses its connection with the primitive follicle, though still retaining its connection with the lamina ; while the primitive follicle, by the severance of its cord, (which takes place just below the point where the secondary cord branches off), becomes isolated from the epithelial connection, and continues its individual evolution. It was doubtless by examining the jaws at the stage of development just referred to, without taking into account the earlier and later phases, that led to the belief that the cord of the permanent teeth emanated from the debris of the primitive cord, or directly from the epithelial lamina.

The descent of the secondary bourgeon into the dental groove is soon followed by the entire series of phenomena which are common to every follicular evolution.

While these phases of development are being accomplished, the stump of the ruptured cord which remains attached to the primitive follicle, becomes the source of those fragmentary growths

and buddings, which always commence from the moment the cord is severed, (about the fourth month), but it seems to occur in the embryos of other mammals a little earlier in the period of gestation.

Dr. J. E. Oudet positively denies that any of the permanent follicles are derived either from the cords or from the follicles of the temporary teeth. On the contrary, he claims that they emanate directly and independently from the mucous membrane.

Dr. G. V. Black's extensive observations in this direction have convinced him that, "although the epithelial cords of the twenty anterior permanent teeth generally arise from those of the temporary follicles, yet that they do sometimes emanate directly from the epithelial lamina."

Now, these facts are claimed to be proven beyond a doubt, and if true, the secondary cord may emanate directly from either the lamina, the cord, or the follicle itself.

Some differences are observed also as regards the direction of the secondary cord in the different species. While in the human embryo it takes a vertical course, in those of the herbivora it follows an oblique direction, but passing above the temporary follicle, it pursues a curvilinear route to the internal or lingual face of the follicle.

The length of the cord, as a general rule, is governed by the height of the alveolar border and the direction of the primitive follicle.

The cord of the secondary follicle in its descent always assumes a spiral form, resembling the duct of a sudorific gland, in the epidermis. This special arrangement is so marked a characteristic of the secondary cord that it may at once be distinguished from the primitive cord; for, though the latter describes some sinuosities it is never so distinctly spiral as the former. The reason of this greater spirality in the cord of the permanent follicle, is from the fact that it must traverse the more developed tissue of the jaw, to a greater distance, to reach the follicle in its passage to a point below that of the temporary tooth, without straining the cord, or disturbing the parts to which its two ends are attached. This spiral arrangement is particularly noticable near its point of origin, but toward the terminal extremity diminishes and finally disappears, giving rise to a rounded enlargement exactly like that found at the extremity of the primitive cord, which represents the enamel organ of the permanent tooth.



When the new follicle has arrived at the stage of development, when the bulb becomes unicuspid for the canines and incisors, and multicuspid for the molars, the epithelial cord which has, for some time, been severed from the primitive cord, becomes in its turn ruptured.

From this period the secondary and primitive follicles are isolated from all connection with the epithelial lamina, during their subsequent evolution.

This is the mode of genesis of the follicles of the permanent teeth that are preceded by temporary ones, but the origin of the first teeth that appear behind the deciduous set is entirely different from that of the anterior permanent teeth. The first permanent molar, which becomes considerably developed in foetal life, is derived from an epithelial cord which originates directly from the epithelial lamina.

The second permanent tooth originates similar to the twenty anterior permanent teeth, from a diverticulum or outgrowth of the cord of the follicle of the first molar, but they differ in the direction of their course, while those derived from the temporary follicles pass over the lingual face of the temporary follicles to a point beneath them, that of the second molar takes a horizontal course for some distance, then, by an inflection, takes its position at the posterior side of the follicle of the first molar, where it is developed in a line with those anterior to it.

The origin of the third molar, or wisdom tooth, is effected in a similar manner to that of the secondary molar, the cord that produces its follicle emanates from the cord of the second molar.

It seems there has been more difficulty in ascertaining the origin of this tooth than that of any other, owing to its position and alteration of the tissues of the jaws after they have acquired considerable size and hardness.

And yet Legros and Magitot have been enabled to determine with certainty its origin. The mode of genesis is the one I have just described. According to these observers the cord for the first molar originates from the epithelial lamina, it becomes the medium by which the follicles of the succeeding molars are derived.

All the evolutionary phenomena are the same to whatever dentition they may belong, but the order in which their evolution is accomplished varies according to the nature of the temporary or the permanent character of the future teeth.

## THE PRESIDENT'S ADDRESS.

BY DR. J. HOOPER.

[At the opening of the Kentucky State Dental Society.]

GENTLEMEN : In scanning your faces to-day a feeling of sadness swells up in my heart in the contemplation of that one who must ever more be absent from our Association. There is in our midst a vacant chair never more to be filled. A voice which once united with us in council, and ever pleasantly greeted us with "How are you, my brother?" is silent forever more. A smile of kindly welcome hath departed, and these but remind us of the sad loss of our dear friend, William H. Goddard, or "Pap Goddard," as we usually greeted him, and truly; for was he not a father to the younger men of the dental profession? He entered it before it was a science—rather, when a mechanical trade, and left an example we younger members should endeavor to follow by ever being upon the alert when opportunity proffered advancement to the science of dentistry. He lent a willing hand and heart to the chariot wheel of dental science whenever required to raise it from the mire of charlatanism. He fell while standing on the very highest pinnacle upon which the profession could place him, holding high our noble banner, and bequeathing to us an example worthy of our emulation. While we deeply feel our loss and must ever revere his memory, we must not repine at the workings of a higher power, but ever plead in the cause of the progression of dentistry, which always gained his approval. To mother earth we consigned his loved form, and to his Maker his spirit. Our legacy from him is onward and upward, Science of Dentistry.

In reviewing the various fields of dental science, I note some that should be more thoroughly cultivated, to which I desire to call the attention of this Association, for this reason, that the mind of the public may be aroused and educated to that extent that it may be able to discriminate between scientific and false dentistry, and be protected from imposition and fraud, thereby advancing and elevating the science.

Could the public mind be trained thus, there would be a demand for well-qualified dentists, and stimulate those who are indifferent to higher aim in the profession.

But to accomplish this will require the hearty co-operation of all desirous of attaining for our cause the highest position, and to

do this the "ax and hoe" in this field must be wielded by strong hands, and backed by willing hearts.

Scientific facts must be established that cannot be refuted. We want men of courage, strength of character and will to lead us, who bear upon their banner the motto. "I will succeed ;" not, as some have done, labor industriously for awhile, then turn aside to some other field because of its popularity. In this connection I will mention those of major import :

First—Food and its relations to the teeth.

Second—Eruption of the teeth.

Third—Care of school children's teeth.

Fourth—Educating the public and how.

How important to cultivate scientifically the first field mentioned. The whole animal and vegetable kingdoms owe their life and existence to food, being composed of elements obtained from it; and when I say food, I mean that which we eat, drink, breathe and absorb for the sustenance of our well-being.

Dr. E. S. Gaillard says in an article on food, that it can be divided into two classes—the nitrogenized and non-nitrogenized, the former class being that which contains gluten, forming the teeth, bone and muscle, and imparting to them their strength. The latter class, starch, sugars, and all classes of sweets, which form the fats for the purpose of maintaining animal temperature.

It is not surprising to hear the question from our patients, "Why are my teeth so imperfect, when my parents and grandparents had good teeth?" when we consider that there are ten pounds of non-nitrogenized food eaten now to what there was in our forefather's day. The food at that time was not deprived of its gluten, or nitrogen, as at the present day.

I will append a list of some of the cereals that have been analyzed under the microscope by Dr. Ephraim Cutter, A. M., M. D., of New York, (late of Boston), and published by Dr. E. S. Gaillard, A. M., M. D., LL. D., of New York. He says: "The following advertised food stuffs contain no gluten cells: Cold blast flour, extra; barley flour, extra; buckwheat flour; Indian wheat flour; Lost Nation wheat flour; Minnesota Surprise flour; Hazleton wheat flour; Puritan wheat flour; Patapasco flour; Underwood wheat flour; fine granulated wheat flour (thirty gluten cells). Gerber's food for infants and children, and many other preparations contain no gluten cells." He further states: "The medical

profession should establish an accurate public sentiment as regards cereal foods; those lacking the gluten cells are devoid of the nutritive elements of the grain." All scientific professions should enlighten the public mind on this all-important subject.

Dr. Gaillard cites to a well-known physician of New York, who endeavored to ascertain the duration of time he could maintain life, without serious suffering, on a diet of gum and starch; though the idea was soon abandoned he has never recovered from the effects of his rash experiment.

Twenty-five years have elapsed since the endurance of his self-imposed ordeal, and to-day his heart beats thirty per cent. faster than it did previous to the experiment.

First dentition is the most critical period of the human race, the mortality being greater at that date than any other, attributed to dentition. Medical and dental professions should especially cultivate this field; it belongs rather to the former in public opinion, because it has been misplaced, but should be recognized as properly belonging to the dental profession. I believe if dentists had charge of first dentition the mortality of children would be decreased. The study of the teeth makes dentistry a profession. Some physicians will tell you that the child's gums should not be lanced to avoid the formation of a cicatrix, but when a man who has been a hard student and close observer for over thirty years, and is accepted as authority, informs us we need not fear that, that he has never found a cicatrix in all those years, I think he may be safely relied upon.

A few words on the care of children's teeth between the ages of three and five years. A great many lose their teeth during that period. If parents knew what could be done, and the importance of caring for them, I know they would willingly do it. If extracted before the proper time there is great danger of rupturing the permanent teeth, interfering with mastication, and causing constriction of the arch, producing deformity.

The case of school children's teeth is attracting more universal attention. We begin with children at the age of five and continue until eighteen or twenty, at which ages children in this country attend school. At the age of six they begin to erupt the permanent teeth, and during that period nature is very much taxed for the general development of the entire body, and it is vastly important that due regard be given the teeth at this



stage of existence, that they may masticate the food properly, that it may assimilate and build up the body as nature demands.

If neglected, which ninety per cent. are, the result will be disastrous, which I will prove by competent witnesses before I finish this subject. I place the per cent. of decayed or carious teeth somewhere in seventy; those affected by tartar in fifty; diseased gums between thirty and forty, and irregularities between twenty and thirty.

All dentists who have been close students and observers, as well as parents who have their children's teeth examined, will bear me witness and testify to the disastrous results occurring from the neglect of teeth.

The eyes and teeth are supplied by the same nerve, or a branch of the nerve, and a scientific oculist will inform you that diseased teeth frequently produce serious trouble of the eyes. I could refer to many, both oculists and dentists, as authority to the truth of this assertion. I have frequently had children sent to me (to treat or extract their teeth) before the oculist could treat them for diseased eyes—note the importance of this.

There is much discomfort produced from an unhealthy mouth. A child is unfit for school duties who is so unfortunate as to suffer from this cause, and such a condition renders him dull and stupid. He cannot masticate his food, which provokes indigestion, entailing upon him many ills to which human flesh is subject. An adult in such a state is unfit for business and society. It is useless to endeavor to force knowledge into brains unfit to receive it, and using school funds in that manner is actual robbery. One-fourth of the means employed to establish dental boards, or employ dentists to examine or keep in a healthy state the children's teeth would be a saving of money and gaining of time. Children would learn faster from being in a condition to digest what they study, and the entire country would be benefited. Gentlemen, by a united effort we can establish such a course. We must do it. We owe it to dentistry and the public. I desire this Association to appoint a committee to take charge of this matter, gain all the knowledge they can on the subject, have the facts published in pamphlet form, and give the public the benefit of it. Each school trustee in the State should possess a copy, every member of the legislature, and that committee should visit that body and endeavor to enlist their assistance in this grand cause.

The time is approaching when we must have legislation on this point. Why delay it?

Why should not the grand old State of Kentucky stand in the foremost ranks? In France the authorities have taken steps in this direction. They have an established system by which the school children's teeth are examined periodically, and great good must spring from such a course. Why, then, I ask, must we be tardy in action? Dr. Gross, of Philadelphia, some two years ago recognized the great importance of our profession when he addressed the American Medical Association, which at that time convened at Richmond, Virginia, and was the cause of the formation of the "Section on Dentistry." He said truly: "Every man, woman and child in the civilized world requires the services of the dentist, whereas, but comparatively few persons require the services of the oculist, the aurist or the laryngologist."

Fourth—How to educate the public. The press stands first as the greatest educator in this enlightened and progressive age. If it should become interested and united upon any subject in any State or county, what a power it might not wield for good. Executive officers of cities, Congress, of our States, and even the President, the highest officer of our land, bow at its shrine. Gentlemen, you see and feel its influence.

The press once enlisted in our cause, to send these facts broadcast over our glorious land, and the public would demand that members of the profession would uphold it by being active in its advancement; knowing that justice would then be given at the hand of the dentist.

The least improvement meets approval. Who prefers not modern travel to that of former times? Away with the coach, on with the locomotive. There is as great difference between ancient and modern dentistry as between ancient and modern travel. It has been asserted that dentistry has made greater progress than any of the known sciences.

The time is approaching when every medical school will possess a dental chair as well as the few. Why cannot Louisville establish one and be foremost in the ranks? All medical professors will surely say that such should be done.

It has been said, and truly, that "the mouth is the index of a great many diseases." The practitioner of medicine should then be perfectly familiar with the index of those diseases.

## MECHANICAL DENTISTRY.

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BY DR. T. HOOPER.

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[Read before the Kentucky State Dental Society.]

The Executive Committee having appointed me to discuss or have a paper on the subject of Mechanical Dentistry, although I have had but limited notice, I will endeavor to express a few practical thoughts.

I have heard some dentists disparage this branch of dental science, but I deem it one of vast importance. I think it requires talent, thorough cultivation and artistic ability, combined with thought and good judgment, to comprehend it and insure it a success.

The mechanical dentist must correct irregularities; he must possess the knowledge of the extent to which the arch should be expanded when contracted, when and how to remove teeth when irregular in children, that the arch may develop as nature requires; not to extend the teeth, producing a narrow, contracted arch in mature life similar to that of a child of ten years. Suppose the six year molars be extracted; they occupy the space of half an inch on each side of the mouth; that space will contract, as those men who advocate the extraction of the six year molars will admit. A child having three molars extracted will at the age of twenty years present a mouth in a badly deformed condition, for this reason, from its teeth developed into a wide, round normal arch, the space of an inch in each arch has been permitted to contract, producing the deformity.

This is what is done, gentlemen, when the six year molars are extracted before the jaw is fully developed. I must take issue with you who advocate early extraction of the six year molars, for I have seen adult mouths deformed from having the lateral incisors and canines extracted for irregularities, also from the teeth being filed too much, especially when the lower arch is a little prominent, the arch will contract and let the upper fall in behind the lower teeth. I will prove my assertion by this model, of which I took an impression. You can see where the first bicuspid were extracted nine months ago, by a dentist who has

the practice and the confidence of some of the best citizens of this community. You can observe the deformity produced by such a course. In the fitting in of artificial teeth the best judgment and artistic skill is requisite.

The mechanical dentist must restore nature by replacing the features of the face and the expression lost by the loss of the teeth. He should be able to inform those desiring artificial teeth what restoration could be made for lost features and expression. He should know what teeth to select to correct deformity, and be able to inform what teeth could be treated and filled, and have the courage to refuse to extract teeth that might be saved.

One desirous of becoming a fine mechanical dentist should first learn operative dentistry, familiarizing himself with the normal positions of the teeth, and study to treat and save them. Many learn dentistry backward, by studying mechanical first. It is not surprising, therefore, to hear some clamoring for a divorce of operative and mechanical dentistry. I deem it the lack of ability on the part of all such. That is one reason why young men entering the profession say, after practicing awhile, "I don't like mechanical dentistry, but I do like the operative; I wish I could dispense with the former." Gentlemen, that proves to my mind that mechanical dentistry is the most difficult. It is a self-evident fact, that if mechanical dentistry were placed in its proper sphere, and the public educated to what scientific mechanical dentistry is, we would fail to observe on our thoroughfares the deformed creatures it is now our lot to encounter; and we would, in a measure, rid our noble profession of its frauds.

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## GERMS AND ACIDS.

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BY PROF. J. S. CASSIDY, M. D., D. D. S.

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[Substance of a paper read before the Kentucky State Dental Society.]

So much thought has been expressed of late in favor of and against accepting the so-called "germ." theory of disease in general, and of dental caries in particular, that I would hesitate to say anything on the subject were it not for an honest desire to accept both sides of the question, and try to reconcile, in my own mind, at least, the differences in the relationship between



the germ and the acid, whether sought for in the human mouth, or in other conditions, favorable to spontaneous passage of highly organized compounds towards what we call simpler forms of matter.

The influence of minute organisms in causing putrefaction or decay, has been recognized as a fact almost since "the morning stars sang together." Of late years the microscope has demonstrated the existence of many distinct and indistinct species of the genus bacteria, and, perhaps, each in its own sphere and circumstance, really does promote the disease with which it is credited. There still remains, however, the open question for science to answer: "In what way is their influence accomplished?"

All modifications of force effect chemical changes, easily or otherwise, according to laws and conditions, known or unknown, of mutual affinity, between the reacting substances; and "vital" force, whether animal or vegetable, is the most persistent in its selective action, overcoming adverse physical conditions of matter, in order to assimilate that by which the principle of life may be sustained. With bacteria, organized structure or the debris of such, is required for food, much as with animals of more pretension; they cannot construct protein from the mineral kingdom; hence inorganic material neither putrefies nor ferments. Neither would organized matter when excluded from germinal influence, suffer the spontaneous decomposition implied by the processes of putrefaction and fermentation, terms, by the way, having the same general chemical significance, except the odor.

It is well known that the average human mouth is peculiarly favorable to harbor all the requisites for active changes. Eight different kinds of bacteria have been detected there, any one of which at the normal temperature, can induce molecular disturbance in the semi-liquid, highly-organized residue of food mixture and mucus. It is a most convenient and luxurious dish for them, as indeed are all other similar mixtures and more or less devitalized tissues generally. But in what way is the degenerative metamorphosis induced? Is it by the removal of certain constituents from the mass, in order to nourish and multiply the bacteria; or is it that they bring with them the essence of catalytic influence, which by mere contact changes the already predisposed complex fluid, or living tissue, into their own proper food? Thereby, in the case of fluids, extraneous or otherwise, reducing the residual

or most easily affected organic compounds into simpler forms, and with living tissue provoking inflammation, and perhaps specific disease. The latter view seems to be in consonance with the general idea of germ influence, premising, however, that the substance or part affected thus, must in all cases be in such perfect physical and chemical condition as to furnish the bacteria with their natural and sufficient nourishment.

Now in all fairness, in the light of experience and common sense, is a tooth, alive or dead, ever in such condition? We answer most emphatically no. Nor do many of the germ theorists claim such to be the case, a few, at least, admitting that the bacteria must first find little holes in the enamel into which they, the bacteria, crawl, while a large majority, according to my reading, admit that the enamel must first be softened by an acid in order to permit the little animals to feed on the sweet gelatinous portion of the interior, and by such feeding merely comes the disease known as dental caries in all its varieties. Is not this, so far, a fair statement?

On the other side (let us agree that it is the chemical side), the fact has always been well known that an organism of some kind was a necessity to fermentation. But fermentation is neither more nor less than chemical change, and though the substances be whatever they may, if the process be allowed to continue uninterruptedly to the end, it will be found to consist first of due preparation for the reception of germs, then rapid passing through several stages, each stage producing its own peculiar compounds, until finally the acid stage is reached, at which point the process, *per se*, is at an end. Let a given mixture be prepared as food for bacteria, and we can foretell nearly all the several compounds which will ensue, down to the typical acid of the special process. But with such mixtures of animal and vegetable matters as must of necessity exist, much or little, in the omnivorous human mouth, as soon as decomposition begins, the results are modified, not alone by the vicissitudes peculiar to the part, but also by the oft-recurring changes in the composition of the heterogeneous mixture itself, so that no prediction can be made from day to day as to the probable result; the process is beyond our control. There is, however, one important fact to remember, that an acid is the usual ending of every process of fermentation; and there is no truth in chemistry of which I am more fully convinced than

that an acid in its *nascent* state, is the beginning of dental caries, and indeed the only solvent throughout the entire course of the disease. A cavity in a tooth so begun, is a very favorable place for continued fermentation, by the extraneous matters it receives and can retain, and by the consequent irritation and inflammation of its own organic structure. Of course living organisms are present also, for, as truly remarked, "putrefaction is a concomitant not of death but of life."

The claim that analysis has proven the normal quantities of calcium salts still in a carious cavity is absurd, as every dentist surely knows; but even if comparatively large quantities of calcium phosphate were occasionally found in the devitalized part, which I do not doubt, its presence can be easily explained by remembering that hydrochloric acid does not decompose calcium phosphate; it simply dissolves it, the salt chemically unchanged being susceptible to complete precipitation from solution by the ammonia which is formed in the localized putrefaction.

For the sake of brevity I have purposely avoided the mention of the names of authorities, and have not entered into details as to any of the probable reactions in the mouth, save the one just alluded to, nor of the acids most likely to be developed there. The object for which I wrote thus briefly being merely to see how a firm believer in the insidious universal influence of germs can consistently vote aye on the acid doctrine of dental caries.

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## DIES, ETC.

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BY HASKELL, CHICAGO.

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IN the June number of the JOURNAL appeared a "critical" reply to an article of mine written for the benefit of the younger members of the profession, and especially new beginners, and in which I gave the results of a long and exclusive experience in mechanical dentistry.

My object in doing this was to enable them to accomplish certain results by more simple and expeditious methods than those usually employed.

It so happened that our critic having a large number of young



men under his instruction, some of whom have fully tested these methods with complete satisfaction, fearing his charge would become demoralized, attempted to refute my position.

The result has been a rehash of the old twaddle about the expansion of "hydrated calcium sulphate" (we use plaster of Paris!) and the necessity of a shrinking metal to counteract the effect, etc., etc.

Now, we don't deny the correctness of the *theory*, but do say that *practically* it doesn't amount to anything, and that facts proved by *experience* are worth infinitely more than facts proved by *theory*. This is just what we have done, and desire to impress upon the minds of the young men in the profession.

Of course "Ephraim is joined to his idols," and evidently don't wish to get out of the old rut. It is difficult to "teach old dogs new tricks," and we don't propose to try, but in a few words will reply to his statements.

As to the plaster, the expansion of the cast, in a measure counterbalances the expansion of the impression; but suppose it does not, the expansion practically amounts to nothing, and the less time our critic devotes to measuring plaster expansion, and devotes it to something more practical, the better for all concerned.

Then, again, this talk about the necessity of a *shrinking* metal for dies. I challenge any one to produce anything like as satisfactory results as to fit of plates in any given one hundred cases, as by the use of Babbitt metal, to say nothing of the greater simplicity of the method; and I think I *know* when a plate is adapted to the gums and palate. I am no novice in this business, and know whereof I affirm. Furthermore, I will assert that any one who will give it a thorough trial will have no further use for zinc.

A dentist of twenty-five years experience, who did a large amount of metal work, and whom I instructed in my methods, said, after a month's experience: "It makes me mad when I think of the annoyance I have had in the use of zinc all these years, when there was a metal so much better."

"It is the exception rather than the rule," that a plate needs change from the die, in fitting to the mouth, rather than *vice versa*, as our critic asserts; and I pity the student who starts out in practice with the idea that he must fit his plates to the mouth with a pair of pliers.

Then he says. "Does he mean to convey the idea that there is



any possible difference in the manipulation of zinc and the alloy he advocates, save that of the somewhat increased melting point of zinc?"

I mean to say that, taking the whole process of preparing models, moulding in oiled sand, using the Babbitt metal for a die, and in the swaging of the plate, there is the greatest possible difference in practical results, being *shorter, easier and surer*; and that is just *what* I mean by "in view of such results."

It is always possible "to wipe off the metal from an oiled plate;" and the man who is not capable of doing it would better quit making metal plates.

We reaffirm our statement, that it is better to "cut and lap" a full plate; for while there is no possible objection to it, as it can readily be finished so as not to show. On the other hand, it saves time and annoyance. and *does* strengthen the plate one hundred per cent. at the place where it most often breaks. This advice is not for the "lazy man," but for the busy man, who, while doing his work well has no time to *pudder*.

As to the use of asbestos, we use it where it is desirable, and sand where it is best.

Plate No. 28, "standard" gauge, is the thickness generally used for full or partial plates, and is thick enough, and partial plates should always be doubled around the weak points. No. 24 is thick enough for backings. We burr the surface of the backing after soldering, because it leaves a better surface.

Yes, "the alloy known as Babbitt metal, has its use to serve," you truly remark, and its use is of vast importance to one who does not wish to fit plates to the mouth with pliers (and we are told of some who carry a pair in almost every pocket?) but prefer *certain* results from simple methods.

Continue to "chew the pudding string." We prefer to test the pudding on its merits.

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## DENTAL LAW IN MICHIGAN.

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THE State of Michigan "has been, and gone, and done it," as the following, which is now a law, will demonstrate to any one who reads it. A long struggle, and a very sharp one at the outcome, seemed to be necessary. As a general rule, legislators have

great pity for the poor quacks, mainly because each one owns a vote. Let other States follow the good example. We thank Dr. G. R. Thomas for a copy.

#### A BILL

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##### TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF MICHIGAN.

SECTION 1. *The People of the State of Michigan enact*, That it shall hereafter be unlawful for any person to practice dentistry in this State unless such person has received a diploma from the faculty of a reputable dental college duly incorporated under the laws of this or some other State of the United States, or a certificate of qualification from the board of examiners provided for by this act: *Provided*, That the provisions of this section shall in no way apply to or affect any person who is now located and in actual practice in this State.

SEC. 2. Said board of examiners shall be appointed by the Governor of this State, and shall consist of three practical dentists, who shall be regular graduates of a reputable dental college duly incorporated under the laws of this or some other State of the United States, or otherwise possess the necessary qualifications contemplated by this act.

SEC. 3. Each member of this board of examiners shall serve for a term of three years, and until his successor is duly appointed and qualified; except in case of the first board, the members thereof shall serve respectively one, two and three years, as specified in the appointment of the Governor.

SEC. 4. The board of examiners shall be organized as follows: The member having but one year to serve shall be president of the board; the one having two years shall be treasurer, and the one having three years shall be secretary. The treasurer shall make and file with the Secretary of State a good and sufficient bond to the people of the State of Michigan in the penal sum of one thousand dollars, conditioned that he will well and truly pay over all moneys received by him as such treasurer in compliance with the provisions of this act, and otherwise faithfully discharge the duties of his office.

SEC. 5. The board of examiners shall meet at least once in each year for the purpose of examining applicants after having given personally or by mail thirty day's written or printed notice to each practicing dentist in the State who has filed his name and postoffice address with the secretary of said board. The said board is authorized to incur all necessary expenses in the prompt and efficient discharge of its duties, and pay the same with any moneys in the hands of its treasurer.

SEC. 6. Each member of said board shall qualify by taking the oath of office prescribed by the constitution of this State and filing the same with the Secretary of State before entering upon the duties of his office. Should a vacancy occur in said board, the Governor of this State shall fill the same by appointment.

SEC. 7. Any member of said board of examiners may, when the board is not in session, examine applicants, and in case any applicant is found competent grant a license to him to practice dentistry in this State until the next meeting of the said board and no longer, upon the payment of the sum of three dollars. *Provided*, No member of the said board shall grant a license to one who has been rejected on an examination by the board.

SEC. 8. Should any member of said board be unable to attend at the meeting of the board for the examination of applicants he may appoint in writing a

substitute who shall have the same power on the examination that the member appointing him would have if present: *Provided*, Such substitute be a person eligible to be a member of said board within the provisions of this act: *And provided further*, That the appointment of such substitute be by and with the written consent of the other members of the board.

SEC. 9. Each applicant shall, on receipt of a license to practice, pay into the treasury of the board the sum of ten dollars, which shall constitute a fund to defray the expenses of the board; and each member of the board shall receive therefrom the sum of three dollars per day for services rendered as such examiner. The said board shall keep a list of the names of all persons to whom licenses have been granted under the provisions of this act, and also of all persons practicing dentistry in this State in a book provided for that purpose with the names arranged in alphabetical order.

SEC. 10. Any sum in excess of one hundred dollars which, under the provisions of this act, may accumulate in the treasury of said board, shall be paid by the treasurer thereof into the treasury of this State.

SEC. 11. Each person now engaged in the practice of dentistry in this State shall within ninety days after this act takes effect send an affidavit to the secretary of said board setting forth his name, place of business, postoffice address, the length of time he has been engaged in practice in this State, and if a graduate of a dental college, state the name of the same, and also pay to the treasurer of said board the sum of twenty-five cents, and on failure to comply with the provisions of this section he shall be required to appear and be examined by said board.

SEC. 12. Any person who shall practice dentistry in this State in violation of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than twenty five dollars, nor more than one hundred dollars, or sentenced to imprisonment in the county jail for a period not exceeding ninety days, or both such fine and imprisonment in the discretion of the court: *Provided*, That nothing in this act shall be construed so as to interfere with physicians and surgeons in their practice as such.

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## PATHOLOGY.

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BY DR. J. M. CLIDE, COVINGTON, KY.

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(Substance of a paper read before the Kentucky State Dental Society.)

THIS, probably the most difficult and least understood of all the medical sciences, has been assigned to me and my friend Dr. Cooper, and that, too, without limitation. It is difficult to separate pathology and etiology. Indeed, Greene, in his introduction, says pathology treats of the origin, nature, course and cause of those changes in the body which constitute disease. This is, I think, a very broad and comprehensive definition, and yet it is not easy, or perhaps judicious, to restrict it. Physiological and pathological conditions are somewhat antipodal. A tissue or organ is

in a physiological condition when it performs its functions perfectly. This is its normal condition. Whenever an organ fails in any degree to perform its functions in harmony, it is just to that extent in an abnormal or pathological state. This, were the definition restricted within its narrowest limits, is the thing to be studied under the head of pathology. But this would leave us in ignorance as to the proper therapeutical agents, and hence a knowledge of the origin and causes of the disease in question is necessary in order to an intelligent application of these remedies.

Having made these general remarks, let us direct attention for a short time to a few special cases. First, dental caries. Here the origin and cause, whether acids or bacteria, are still a matter of dispute. We believe the acid theory accounts better than the other for the different conditions, whether white, light, brown or black, soft, leathery or hard. But, whatever may be the causes, we know that the remedy consists in a thorough use of the excavator, and the substitution of gold or some other material, and in the application of such constitutional and local remedies as will neutralize the acid conditions or destroy the bacteria, which produce decay.

Next, alveolar ulceration. I believe it is generally held that this begins at the margin of the gums and is caused by calcareous deposits about the necks of the teeth. This may be true, but may not the real cause lie in a too low grade of dental vitality, a grade of life so far inferior to that of the surrounding tissues, that nature, ever true to herself, failing to restore the lost vitality, sets this process in operation to divest herself of those organs which have become to all intents and purposes, irritants? I ask this question merely to provoke discussion and not from any real investigation I have made, or conviction that such is the true cause. That the deposit on the roots of such teeth differs in some respects from that about the necks is patent to the observation of every dentist. It adheres very firmly to the roots and is granular, that is, it is not deposited evenly on the roots like salivary calculus about the necks, but in nodules scattered more or less thickly, so far as the disease extends. It is also accompanied by an almost constant discharge of a greater or less amount of degenerated pus, very offensive, especially to the operator. Salivary calculus, I believe, generally destroys the entire gum so far as the deposit extends,



but alveolar ulceration more especially destroys the bony tissue. I have seen the soft parts left almost intact, the bony walls which support the teeth almost entirely gone. As a natural consequence the gums in such a condition are more or less congested, flabby and tumefied. I have seen all this where there was but little deposit of salivary calculus. Now I wish to ask, is alveolar ulceration the result of the deposit, or is the deposit a result of the ulceration and chemical analysis of the pus found? Does this pathological state have its beginning, progress and end in salivary calculus, or is it a disease *per se*? Can this disease begin around the root of a tooth which is not in itself in a pathological condition? And, lastly, is not this the condition known by the high-sounding and euphonious title, *pyorrhæa alveolaris*?

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## Correspondence

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"I charge you that this epistle be read"

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*Editor of Ohio State Journal of Dental Science:*

I HAVE had it in mind at various times during the year past to make inquiry after your general health, and learn, if possible, what injury it may possibly have received as a result of the abuse your theory of dental caries has taken from this *oriental*, this BRILLIANT quarter of the United States.

It is not necessary to agree with you upon the causes that you believe occasion and maintain the carious process in teeth, to admire the grit and courage with which you defend your theory against the attacks of your opponents. A man who has the courage of his convictions is always an object of admiration.

This is a wonderful region; the talent displayed here by some is quite phenomenal, and I cannot illustrate this fact better than by referring to an editorial in a recent issue of a periodical, that is on your exchange list, wherein a certain well-meaning, kind-hearted student, who, without special training, without proper instruments of investigation; without having made one single direct investigation of this subject, and yet whose work may be

(even in a *small* way) compared with the labors and achievements of Kepler, who divested the Copernican system of the universe of its absurdities. How can we compare the small with the greater, except where analogy exists between the two? This comparison being made probably to illustrate how *well* the *evidence* has been weighed, sifted and certain *laws established* regarding the etiology of dental caries ???

Facts are facts, and their arrangement in logical order is a natural sequence, when sufficient of them, in a certain line of investigation, have been gained to make a complete whole. Bricks are the material factors of the future structure, but enough of those factors to make a complete structure must be available, or else the building remains an abortion. The careful architect knows the exact number of these factors necessary for his structure before one is laid in the foundation. Are not, then, the factors of paramount importance? How plainly this question is answered by that *logician* and *eminent* scientist, Dr. Miller, of Berlin. Are not his methods of investigation the most complete and exhaustive of any and all other investigators combined? Is he ready with a complete theory of dental caries?

He finds *lime salts* in the softened tooth structure. Does he reject the theory of an acid producing the primary softening because of this fact? not at all. Does he straddle a dental bacterium for a ride, because of this find, and copy the action of some of our *eminent* scientists (?) of the east? O no, there is another side to this question which does not suggest itself to the *great* thinkers of Massachusetts. He carefully brings the conditions of flask experiments as near the natural conditions of the mouth as possible, he then *artificially* softens tooth structure, the product is carefully submitted to analysis, and is found to contain *lime-salts*. Our friends over here say, "Ah, but the bacteria produced the acid "which caused the softening because the change occurred in the "sound dentine under a composition of bread and saliva." Probably, but don't lose sight of the *fact* that other experiments show conclusively that bacteria act solely upon the *softened product*; that they do *not* generate sufficient acid to continue the softening process; that the period finally arrives in the experiment when the immense number of bacteria present have no more food, are unable to further get a living, and cease to exist. Are these facts anything of themselves more than a suggestion?

This work of Dr. Miller's is on par with, if not *superior* to any experimental work in the investigation of disease ever performed, and the result of it, up to this period of time, necessitates a drawing from, instead of toward a germ theory of dental caries.

I don't know that Dr. Miller desires to be considered an *authority* upon astronomy, archeology, physiology, physics, etc., nor to lord it over those of "*a little microscopy*;" but he *is* an authority in *chemistry* and *microscopy*.

To show you that some would be considered authority where they know very *little*, it was stated at a recent meeting of dentists, that the softened dentine next the sound portion was *dead* in a tooth with a live pulp. To be sure amateurs do not claim to know as much as "professors," but I can easily prove this statement without foundation, in fact by my microscope; and I am not anxious that the world should move round my individual instrument either. Proper manipulation of the specimen will show life to have been present in the deepest portions of the softened dentine when removed from the mouth. This is a fact regarding this subject of dental caries deserving more than a passing notice; for herein lies a truth, and a field of investigation hitherto unexplored. By the *most* delicate treatment of the subject, discoveries will yet be made in this direction, which will show certain effects upon the dentinal fibrillæ that will bring us still nearer to the cause of the softening process of the hard tissue.

I truly hope that no seeker after the *truth* will allow himself to be influenced by sophistry. Let him consider the *fact* that "a little microscopy does not constitute a scientist" in the eastern acceptation of the term, but that a considerable knowledge of the instrument, weighted with the experience of a few years in manipulating dental tissues for study under the microscope, combined with about four and a half grains of good, old-fashioned, *common* sense will qualify a man to steer clear of some of the *science* (?) of this region.

EASTERN TRUTH-SEEKER.

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STEEL, in wire or sheets, may be readily tinned by thoroughly cleaning and immersing in hot oil or tallow, and then dipping into melted tin.

## Editor's Specials.

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"Write the Vision and make it plain."

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### INDIANA STATE DENTAL SOCIETY.

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WE had the pleasure of meeting with this energetic Society the first day of its late annual meeting; and on the morning of the second day the members listened to what I fear was a dull lecture on the NATURE AND ETIOLOGY OF DENTAL CARIES, which we had prepared as a friendly offering to the good society's silver wedding. But dull or otherwise, the members, younger and more experienced, listened as children listen to their father's fairy tales. We had to retire at the close of the lecture, and were unable to be present afterward.

It was our intention to give a condensed report of the Society's transactions, especially the discussions, but the state of health forbade, and still forbids a just and proper notice of this good Society.

Before closing, we must be allowed to thank our brethren of Indiana for the substantial and tangible recognition of our effort to do them good. They have never allowed us to go a warfare at our own cost, and may the Giver of all good, give them all good.

The officers elect are as follows:

President—Dr. M. H. Chappell, Knightstown.

Vice-Presidents—Dr. F. C. Eddleman, Greensburg; Dr. F. M. Harmsher, Delphi.

Treasurer—Dr. Merit Wells, city.

Secretary—Dr. R. W. Van Valzah, Terre Haute.

Chairman of Executive Committee—Dr. T. S. Hacker, city.

Delegates to American Dental Association—Drs. J. E. Cravens, city; S. T. Kirk, Kokomo; S. B. Brown, New Albany; R. W. Van Valzah, Terre Haute; J. G. Parsons, city.



## AMERICAN DENTAL ASSOCIATION.

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Soon after the issue of this number the Association will be in session. And though we have no hope of being able to attend, we shall be much gratified if we learn that the meeting of 1883 proves to be the very best meeting ever held by it. Though absent in body, we shall be present in spirit and feeling. An association that honored us with its highest gift within two hours of our connection with it, will not be forgotten by us. Our kindest wishes go with the Association and its members.

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## A NEW DEPARTMENT.

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THE readers will be both surprised and gratified to see in this number a new feature, with a new man to control it. Professor Cravens needs no introduction to the readers of the JOURNAL. His pen is that of a "ready writer;" and with a good, solid, well-trained brain behind the pen, this department can not fail to prove both interesting and profitable. We trust his friends and the friends of the JOURNAL will not discourage him by indifference or lack of interest, but that they will aid and co-operate with him in his new experiment.

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## MICHIGAN BOARD OF EXAMINERS.

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UNDER the new law to regulate the practice of dentistry in the State of Michigan, the following persons constitute the Board of Examiners: Dr. A. T. Metcalf, President, term one year; Dr. J. A. Robinson, Treasurer, term two years; Dr. George R. Thomas, Secretary, term three years.

We give a copy of the law on another page, but it may be well to call the attention of those interested to the fact that every dentist now in practice within the State, must, within the period of ninety days from the time the bill became a law, send to the Secretary, Dr. Geo. R. Thomas, Detroit, his name, place of practice, length of time in practice, and if a graduate, tell

where and when the degree was received; and also enclose a fee of 25 cents, or he will be subject to examination by the Board.

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### SOLEMN SOLEMNITY.

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What a target for an archer, said a fox as he sat erect on a boulder. A twang was heard and a barbed arrow barely missed him. Why, really, said he, it's not safe to crack a joke among these people. They are all quite too serious.

Our experience is similar. Some time ago we referred to some experiments in which we relied on the skill and experience of the late Prof. Wood, adding that, though not an expert, we believed we could see a June-bug if in full view. We intended a slight sarcasm on the practice of using the microscope, with a flourish of trumpets, to look at objects better seen with unaided eyes. A solemn brother, however, has taken it that we supposed the entire bug (if not an elephant) might be seen at a single glance under high powers.

A still more solemn one is distressed at the ignorance displayed in using the phrase, "The bug theory of decay." We don't know who invented the phrase; but it comes handy, and we thank the man who contrived it, yet we never had the slightest suspicion that he regarded the micro-organisms of dental decay as real bugs. And when another called them cattle, we never thought he believed them to be cows and oxen, but perhaps he did.

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### NEW HANDPIECE.

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THE following we find in the *Canton Repository*. Not having seen the instrument we are not able to give additional light in reference to it; but Dr. J. H. generally understands what he is doing.

We were this morning operated on by Dr. J. H. Siddall, for some dental work, and witnessed the working of a new invention just completed by him, and placed in the hands of Henry Fisher, patent agent, of this city, to be patented. This "hand-piece" as it is called, has, unlike all other instruments of its name, a free and

universal motion, without moving its base or causing the dentist to leave his feet while in thorough operation of the mouth. The instrument has been examined by many experts and pronounced the finest, most simple and useful instrument of its kind. Dr. S., the inventor, whose well furnished office and office appointments will compare favorably with any in the State, is using his invention daily. Siddall is all dentist and his "hand-piece" the king.

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## Societies.

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"Wherewith one may edify another."

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### THE AMERICAN DENTAL ASSOCIATION.

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WILL meet at Niagara Falls the first Tuesday in August, at 10 A. M.

The Committee on Credentials and the Treasurer will be at the place of meeting at 8 A. M., Tuesday, at which time it is hoped the members and delegates will present their credentials and pay their dues, as far as possible, before the hour for regular meeting. The afternoon of Tuesday will be set apart for the meeting of the different sections in order to enable them to complete their reports to be presented to the General Association.

J. N. CROUSE,  
*Ch'm Executive Committee.*

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### THE CHICAGO DENTAL SOCIETY.

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THIS virgorous Society has taken a course that, if faithfully executed, will result in honor to the members, will be a credit to the Society, and will greatly advance the science and art of dentistry. Provision is made for an essay on a select subject at each monthly meeting, and the programme from present dates till the beginning of 1886 is published by the Society, so that the essayists, as well as the other members, have time to post up on the subject, to be considered.

"The list of essayists and their subjects" are reported as follows :

1883.—*October*.—DR. J. A. SWASEY. The New *vs.* the Old, or in what are we progressing in the art of Dentistry?

*November*.—DR. D. M. CATTELL. The Etiology of Dental Caries.

*December*.—DR. G. D. SITHERWOOD. Dental Hygiene.

1884.—*January*.—DR. W. B. AMES. Electricity and its uses in Dentistry.

*February*.—DR. E. NOYES. The Fifth Pair of Nerves.

*March*.—DR. GEO. H. CUSHING. Facial Neuralgia—Causes and Treatment.

*April*.—Incidents of office practice, and the annual election.

*May*.—DR. J. G. REID. Correction of Irregularity.

*June*.—DR. P. J. KESTER. Dentition.

*July*.—DR. J. W. WASSALL. The Problem of an Edentulous Race.

*October*.—DR. J. S. MARSHALL. Pregnancy, and its effects upon the teeth of Mother and Child.

*November*.—DR. F. H. GARDINER. *Similia, Similibus Curantur*, as applied to the practice of Dentistry.

*December*.—DR. E. S. TALBOT. *Contraria, Contraries Curantur*, as applied to the practice of Dentistry.

1885.—*January*.—DR. G. W. NICHOLS. Eclecticism in Dental Practice.

*February*.—DR. J. H. WOOLEY. The First Permanent Molar.

*March*.—DR. A. W. HARLAN. The Antrum Highmorianum, Diseases and Treatment.

*April*.—Incidents of office practice, and the Annual Election.

*May*.—DR. R. H. KIMBALL. Metal and Mineral Bases for Artificial Teeth.

*June*.—DR. CHAS. P. PRUYN. Oral Chemistry.

*July*.—DR. T. W. BROPHY. Plastic Oral Surgery.

*October*.—DR. A. W. HOYT. Histological Odontology.

*November*.—DR. J. N. CROUSE. Different Materials for Filling Teeth.

*December*.—DR. E. D. SWAIN. Erosion and Abrasion.

1886.—*January*.—DR. A. E. MATTESON. Plastic Fillings.



## AMERICAN DENTAL ASSOCIATION.

THE twenty-third annual meeting of the American Dental Association, which meets at Niagara Falls on Tuesday, August 7th, will be held in one of the parlors of the "International" Hotel. The "Pavilion" in the Park could not be secured for the purpose, and the committee thought better to secure the room mentioned than to again rent Grant's Hall. Both the International and Cataract Houses will give reduced rates to members and their families, as likewise will all places of interest about the Falls where an entrance fee is charged. The Michigan Central, Wabash, Canada Southern, Grand Trunk & Great Western railroads will give round trip tickets for a fare and a third. To secure this reduction of rates, an application for a certificate of membership must be secured from Dr. Geo. L. Field, Abstract Building, Detroit, Mich. Those wishing them should make as early application as possible.

GEO. L. FIELD,

F. M. ODELL,

T. T. MOORE,

*Committee of Arrangements, A. D. A.*

## PITTSBURG DENTAL ASSOCIATION.

THE ninth annual meeting of the Pittsburg Dental Association was held the first Tuesday of May, 1883. The following officers and delegates were elected :

President—Dr. F. A. Reinhart.

Vice-President—Dr. H. L. Reinecke.

Secretary—W. H. Funderberg.

Treasurer—W. A. Lee.

Censors—Drs. W. F. Funderberg, Williams and Goshorn.

Delegates to American Dental Association—Drs. Dieterding, Diehl, Reinecke, Reinhart, and W. F. Funderberg.

Delegates to Pennsylvania State Society—Drs. Goshorn, Troth, England Williams and Naylor.

W. H. FUNDERBERG, *Secretary*,  
330 Pennsylvania avenue, Pittsburg, Pa

## THE AMERICAN DENTAL CONVENTION.

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The American Dental Convention will hold its next annual meeting at Saratoga Springs, on the second Tuesday in August, 1883. A large attendance is expected, and quite a number of interesting papers are promised.

A. C. RICH, *Secretary*,  
Saratoga Springs.

## NEBRASKA STATE DENTAL SOCIETY.

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THE seventh annual meeting of the Nebraska State Dental Society met at Lincoln, Tuesday, May 22d, 1883, and continued in session two days. Eight new names were added to our list of membership. We had larger attendance than ever before. The following officers were elected for the ensuing year:

President—I. W. Funck, Beatrice.

Vice-President—M. D. Thurston, Columbus.

Cor. Secretary—C. R. Tefft, Lincoln.

Rec. Sec. and Treasurer—W. F. Roseman, Fremont.

### STANDING COMMITTEES.

Executive—A. S. Billings, J. M. Lucas, H. C. Miller.

Membership—J. W. Chadduck, A. P. Camp, L. S. Moore.

Publication—W. F. Roseman, C. H. Paul, G. M. Seeley.

Society adjourned to meet at Hiawatha, Kansas, first Tuesday in May, 1884, in connection with Kansas State Dental Society.

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## REPORT OF SPECIAL COMMITTEE ON THE DEATH OF DR. W. H. GODDARD.

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[To the Kentucky State Dental Society.]

WHILE we welcome with pleasure our professional brothers from far and near at this our yearly reunion, still we look in vain for the one familiar face that every member of our Association was glad to see, and whose greeting and welcome to each and every one was so frank, so hearty, that all felt it was earnest and true.

Our brother and friend, Dr. Wm. H. Goddard, can meet with us no more in this world, but on the other side, when we cross the

dark river we cannot but feel that the same earnest, warm greeting will be extended to us from our friend who has gone before.

No member of the profession was more eager after the discovery of any new light that would aid us in seeking the highest attainments.

Ever at our State Association, when his health would permit, always from his first membership in prompt attendance on the yearly meetings of the American Association. At the time of his death occupying its highest official position, we feel that we, as an Association, and that the American Association, can never too fully appreciate his personal and professional worth.

As an Association, we feel that this slight tribute to his worth is but a poor expression of our appreciation of his full value, but we desire that a copy of this action be sent to his family with whom we deeply sympathize, and that a copy be furnished the Dental journals.

F. PEABODY.

W. H. MORGAN.

A. WILKES SMITH.

J. F. CANINE.

*Committee.*

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## OFFICERS OF THE KENTUCKY STATE DENTAL SOCIETY.

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President—Dr. Van Antwerp, Mt. Sterling.

Vice-President—Dr. Clide, Covington.

Secretary—Dr. C. E. Dunn, Louisville.

Treasurer—Dr. J. F. Canine, Louisville.

The following delegates were appointed to the National Association Convention:—Drs. C. E. Canine, Garnett; J. F. Canine, A. W. Smith, and E. S. Buckner.

## Varieties.

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BY J. E. CRAVENS., D. D. S.

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### STRUCK BY LIGHTNING.

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A CERTAIN gentleman had the peculiar fortune to have the lightning of the Presidency of the American Dental Association strike all around him for years; but never found a vulnerable point until it struck him *behind*, and lifted him into the Presidency.

We have also been touched by lightning at divers times, but not so effectually, nor in that region. Perhaps the most serious stroke came recently in the form of an arrangement with Messrs. Ransom and Randolph, by which we assume editorial control of this department of the OHIO STATE JOURNAL OF DENTAL SCIENCE, beginning with this number.

We expect our friends, who are many, and even our enemies, if we have any, to lend helping hands, and send all the brief articles they can, either original or clipped, and due credit shall be given. It is hoped this department may become a great question box, and that all the readers of this and other journals will avail themselves of the privilege of these columns.

Under the illuminating, inspiring power of our distinguished colleague and senior in this work, we hope to make it a success.

JUNIOUS E. CRAVENS,  
Indianapolis, Ind.

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### RECUT YOUR OLD BURS.

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ATTACH a hard-rubber disk (Dibble's is better) to a dental engine, by a bit having a tightening screw, such as is

generally used for mounting celluloid disks.

The bur to be recut should be placed in a stock or hand-vice to hold it firmly. Proceed to recut, as follows: drive the engine at moderate speed, passing the revolving disk from end to end of each cut in the bur, being careful to omit none; examine the bur under an ordinary magnifying glass, and correct any imperfect edges, until certain that all are well cut.

The disk should be used dry, and removed out of contact with the bur after a second or two, in order to avoid heating by friction, which would spoil both bur and disk. Of course the disk can be reapplied as often as necessary to complete the work.

Any ordinary excavating bur may be recut in this manner in a few minutes, five or ten, after a little practice, so as to be equal to the higher priced stone-cut burs. Besides, the saving in utilizing old burs hitherto thrown aside, is a profitable item.

When a disk becomes round-edged and unfit for this purpose, the edge may be sharpened and rebeveled quickly, by revolving it rapidly against a wet, coarse corundum wheel, being careful to move the disk about over the surface of the corundum to avoid cutting grooves in the latter. These disks retail at twenty-five cents, and one will recut a gross of old burs. Try it.

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### FRENCH VS. AMERICAN.

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DR. E. A. BOGUE, M. D., of New York, who makes regular pilgrimages.



to Paris, France, where he has an office, gives a very interesting report of what he saw there recently.

According to Dr. B.'s statement, the American dentist is in imminent danger of losing his prestige for superior ingenuity and skill, particularly the former.

Dr. Bogue's report may be found in the June number of the Dental Cosmos, pages 319 to 328, (proceedings of the New York Odontological Society) and will well repay time spent by any dentist in carefully reading it.

The French dentists have certainly excelled us in novel appliances and machinery during the past two or three years.

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#### "AN OPINION AS IS AN OPINION"

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[Extract.]

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Lady patients have a right to expect the most scrupulous neatness and cleanliness in everything connected with dentistry—in the operator himself, in his instruments, his napkins, in all his surroundings.

If a dentist approaches a lady without washing his hands, uses his instruments without wiping them, picks up the first napkin that comes handy (perhaps from the floor) to put in her mouth, if his glasses bear the marks of previous lips and fingers, if his spittoon is soiled and offensive, if he blows his breath directly in her face, rests his elbow on her knee or throws his arm heavily across her chest, she is apt to feel very much disgusted. Many dentists do all these things, and I speak from my own observation and experience. But ladies submit, though in loathing and disgust, because the teeth must be fixed.

But let a lady see her dentist carefully rinse his hands in water from which rises some delicate perfume, and

dry them on a daintily clean towel, wipe each instrument (as he takes it in hand) on a neat little napkin kept ready for the purpose, take the napkin for her use from a snowy-white, freshly-ironed pile, offer her water to wash her mouth in a glass of shining, polished crystal, let the spittoon be perfectly clean, and the aperture sufficiently small to conceal the offensive contents, instead of the broad, open-mouthed cuspidores so oftener used; let his every attitude and position show a delicate attention to her comfort and convenience—in short, let her dentist be a *gentleman* in every sense of the word—and she will return to his office with far less repugnance, though the operations may be in themselves painful and severe, and she will tell her friends where to go, too.

Mrs M. W. J.

In Southern Dental Journal.

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#### SOUTHERN ENTERPRISE.

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THE Southern Dental Journal for June has a large fly-leaf bearing the portraits of the officers of the Southern Dental Association. The portraits are fine, as we happen to know several of the officers, and have a fair recollection of their faces. H. J. McKellops, of St. Louis, is well known to dentists everywhere. It is the first portrait of the venerable Dr. Riggs we have seen. He looks more like a prophet than does Dr. Atkinson, of New York. The others, unnamed here, are leading members of the profession in the South. We were not aware, before, that Dr. Riggs was a Southerner; but then, in these days, we know no North, no South, in any other than a topographical sense.

As to the moral effect of the Southern Journal's portrait gallery enterprise, some time will be necessary to develop. If it should appeal to the vanity of the subjects, it would be un-

fortunate; and our Southern cotemporary would have some thing to regret. But should it result in large additions to the subscription list of the Southern Dental Journal, (and that is, probably the real form of the inspiration), no harm will have been done; and we heartily wish this novel enterprise full success.

However, if this scheme tends to popularize the Southern Journal, we are afraid that the portrait fly-leaf idea would become epidemic, and then "no guilty man," or innocent either, for that matter, would escape journalistic crucifixion.

#### ENGLISH ENTERPRISE.

THE following advertisement, taken from the June number of the British Journal of Dental Science, is very suggestive:

"Dental Diploma (sine curriculo). Gentlemen entering for the above examination, should study under my *Improved Method of Tuition Success certain* Full particulars on receipt of stamped, directed envelope and professional card. "L. D. S." 19 ——— Terrace, ——— Kent."

As the foregoing advertisement suggests a sort of private enterprise in which persons are groomed specially for appearance before lawful examiners, we would call the attention of the delegates to the proposed National conference of State examiners to be held at Niagara in August. The conference held at Lexington, Ky., in February, arranged a list of 105 questions, divided as follows:

- 12 on Anatomy.
- 10 " Physiology.
- 7 " Histology.
- 11 " Pathology.
- 10 " Materia medica.
- 10 " Surgery.
- 10 " Therapeutics.
- 10 " Chemistry.

- 9 on Operative Dentistry.
- 9 " Prosthetic Dentistry.
- 7 " Irregularities.

These questions were printed in full by authority of that meeting of representatives of a few State boards of examiners, and distributed over the United States.

Now comes the question of enterprise. How long would a fairly intelligent person, under the guidance of a competent instructor, have to labor with 12 questions on Anatomy; particularly those suggested by the Conference?

There are only 105 questions, all told, and those on Anatomy perhaps, the more difficult of all.

These 105 questions would hardly be acceptable for a junior examination by a faculty of a legitimate dental college, yet they are printed and sent abroad over the land, with an edict that they are "to be used by those acting under *Laws regulating the practice of dentistry.*"

If the several State Boards of Examiners are to receive these questions as a fixed series for all future examinations (sine curriculo), or, if the National Board are to grind out a revision annually, it will be impossible to prevent them falling into the hands of persons expecting to go before examining boards, and quietly stuffing themselves for the occasion.

Any enterprising firm could, privately, like "L. D. S.," in the British Dental Journal, train candidates for board examinations, by an *Improved Method of Tuition*, in this country, so as to be able to render "*success certain*," after 30 days constant cramming and quizzing.

Owing to the simplicity of our Republican institutions, it will be always possible for the questions prepared by the national board to be obtained surreptitiously, although they should be revised annually.

English enterprise is not going to long hold monopoly of the "Improved Method"—"Success Certain"—business; and when the 30 days grooming and stuffing machines begin, what are the examining boards going to do about it?

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### TIME VS. TALENT.

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THE number of years a student has to spend at a medical institution, prior to being admitted to examination for a medical degree, in various countries, is as follows:

Sweden, ten; Holland, Italy and Switzerland, six; Norway, eight; Denmark, six and seven; Belgium, six; Russia, Austria and Hungary, five; France, England and Canada, four; United States, three or two; Spain, two."—*Vratch!*

The preceding figures are interesting to Americans. The natural inquiry is as to the practical results. It's true, that a ten years course in a medical college would possibly make a more highly scientific physician than a course of three years. It is also possible that the instructions scattered out over ten years in Sweden; eight in Norway; and five and six in several other countries named by *Vratch*, ought to have been condensed in three or two, as in the United States. It is also possible that where the instructions legitimately given in three, or even two years, are scattered out over twice that term, the dilution would be so great as to render connected thought by students improbable.

When a student's time is not fully occupied, it hangs heavily upon him, in order to dispose of it he takes to pleasure first, conviviality next, then dissipation, and downright debauchery. It has been our privilege to observe the conduct of students of two or three medical colleges over several years, and we are positive that

those students who do the most loafing and least studying, are they who come to college expecting to take several terms, while those who are compelled, perforce of circumstances, to complete their medical education in two years, as a rule, make by far the higher record for excellence on final examination.

The deportment of students at medical colleges is not always that of gentlemen. The atmosphere of the amphitheatre is pernicious. Vandalism is cultivated as an accomplishment, and boarding houses of the better class are closed against them.

The medical students of Sweden may be a very gentle and lamb-like company; if so, we ought to "*assist*" some to emigrate to the United States.

It is also a fact that each successive year a student attends a medical college, the higher grade he holds as a rowdy. Beginning as a green-horn, he is next an expert, and his last term at the college he is a leader in instructing the new students in the art of hell-raising.

What is true of medical colleges is largely true of dental schools too. But dental students are quieter and more gentlemanly in their deportment, and average higher intellectually. And as intellectuality is advanced, the brute subsides; therefore the dental student is generally not a low fellow. But a dental student's time must not be permitted to hang heavily on him, or he will lapse, and lose just so much in studies, standing and self-respect.

It is far better that he be kept strictly down to hard work and study for one session, than that he be permitted to loaf through two or more sessions.

After all, a dental college can give a student only a skeleton or frame, upon which he must hang his own experience to complete the character of a dentist. Twenty years at college cannot make a skillful practitioner of either medicine or dentistry.

# OHIO STATE JOURNAL

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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### THE NATURE AND ETIOLOGY OF DENTAL CARIES.

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BY GEORGE WATT.

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[Read before the Indiana State Dental Society.]

No other disease, not even a “common cold,” is so common and prevalent as the morbid state known as Dental Caries. From the dawn of science till within the present century—till within the professional memory of men now living, and, perhaps, even present—decay of the teeth was regarded as a result of inflammation as really as was caries of other bony tissues so supposed to be. And this mistake of the ages has been fastened in history, and on professional nomenclature, by the term Dental Caries. While we all recognize it as a misnomer, it is easier to retain it, and explain, than it would be to force a new and more appropriate term into our technicalities. I believe the old theory, that the disease is caused by inflammation is no longer held by dentists, unless indirectly by some who enjoy listening to their own language, and in cases of this kind I have heard expressions something like this: “Why, certainly dental caries is caused by inflammation, for what is inflammation but a retrograde metamorphosis of tissue?” I have



referred to this as an occasion for stating that, in this paper, words will be used in accordance with their ordinary acceptation, as far as I am able to recognize correct definitions.

In 1848 I began to turn my attention to the details of dental science, but did not graduate from a dental college till March, 1854. In 1849, by reading the *American Journal of Dental Science* and the *Dental Register*, I found that such dentists as Harris, Taylor, Taft, Westcott, etc., held to the chemical theory of dental decay; and I was much surprised at the discovery. On careful investigation, however, the truth of their theory was recognized; but their indefiniteness was very unsatisfactory. They all spoke of acids causing decay, and used the term as it would have been proper to use it, had it been true that all the acids known in science were equally active and potent in the production of this condition. I could not bring myself to the conclusion that tannic, and carbonic acid could either one cause the phenomena of decay. This and similar ideas called out the question, "Which of the acids are capable of causing dental caries.

I soon found that the best informed dentists reckoned decay of the teeth as showing a number of distinct characters, some describing four, others only three, and they maintained that the greater variety of appearances found in cavities of decay could be explained by combinations of two or more of the kinds of decay, added to the distinct appearances of the specific forms. Now, I came into the dental profession as a chemist. I had not set up special claims in this direction, but by dentists who knew me and who were responsible for the welfare and prosperity of the Ohio College of Dental Surgery—by the College Association, then the largest society of dentists in the world, I was chosen by a unanimous vote, even without nomination, to fill the place of the disabled philosopher, Elijah Slack, D. D., M. D., LL. D., in the chair of chemistry. I refer to these incidents because there are, in and about our profession, some youthful individuals who regard it as presumption for me to give an opinion on a chemical question; and also to show that it was not surprising that, on finding but a few varieties of decay recognized, and these mainly the results of chemical action, I should remember that chemical action is definite in character, and constant in the nature of its reactions; and, therefore, if there were but a few reactions, as admitted in caries, there could be but a few reagents—that the one must exactly cor-

respond with the other. It followed, then, that if, as believed, decay is caused by acids, the inquiry, what acids? was in order, and ought to be answered. After careful examination of the text-books and periodical literature, without finding a satisfactory or definite answer, a series of independent experiments and researches was begun. But before going directly into the merits of the question, it may be well, in a few general remarks on the kinds and characteristics of decay, to point out the reasonableness of certain conclusions.

All recognize that specimens of dental caries differ widely in appearance. Some claimed, years ago, that these differences were explained by difference in the age of the decay and by variety of constitution. Others held in addition that the rate of progress of the disease modified the appearances.

On the other hand, and more correctly, some claimed that the differences were radical, depending on the differences of the exciting agents, or immediate causes—that, in reality, there are several and distinct kinds of decay.

The most common form of decay observed varies somewhat in color, being nearly colorless when recent, and sometimes nearly black when a considerable time has elapsed. Its most distinctive trait, and that by which it is identified, is that the cavity of decay contains some, and often much, soft, semi-gelatinous material, which, in recent cases, shows, by its structure, which is not yet totally destroyed, that it is really the organic portion or material of the dentine affected. And if this variety of decay is caused by chemical action, the reagent must act, with greater energy on the hard portions, or lime-salts, of the dentine than it shows in its action on the soft, or animal portions, and also, it must form highly soluble compounds in its union with the lime-salts, or they would not be dissolved out without disintegrating the softer tissue, as we often see.

And if this kind of decay is caused by germs, it follows that they derive their nourishment from the lime-salts of the dentine, and penetrate the softer tissues, consuming particle after particle of the harder tissues, without, in many cases, disturbing the organic arrangement of the gelatinous portion of the dentine. But does it not require a stretch of credulity to believe that such organisms exist? Were they to appropriate the soft and leave the

hard tissues, we would regard them as more in accordance with the average nature of things.

In another form of decay we find the color black, even when recent. There seems to be very decided structural change of tissue, but not much displacement of either the hard or soft materials of the dentine. And while the affected material is brittle and friable, there is but little disintegration. Any thoughtful observer would expect the affected portion to yield, on analysis, almost the same results as are yielded by normal tooth-substance. This decay is not so common as the variety just mentioned, still it occurs very frequently. I saw twenty cavities of this kind in the mouth of a young lady who had recently suffered from a protracted attack of typhoid fever, although her teeth were sound at the beginning of the disease. I think it is apt to follow typhoid diseases, especially in patients whose saliva contains cyanide of sulphur, or whose breath gives off sulphuretted hydrogen. The black color and the slight disintegration are the identifying traits of this variety.

Now, if this is the work of a chemical agent, it must be one that fails to decompose, or even dissolve bone phosphate, or, under the circumstances, to form a highly soluble salt with the lime of the calcium carbonate, as found in the tooth; while it blackens the organic materials, without dissolving or disintegrating them, thus leaving them brittle and black in their normal position, and helping to hold the lime-salts in their natural places. Of course this variety would yield nearly, if not quite, all the lime-salts found in normal dentine. And this would be recognized by an intelligent observer without an analysis, as fully as it could be with it. Such a reagent is well known, and it and its action will be described further on.

But if it is caused by germs, they must be able to penetrate the dentine, through and through, to the extent of the part affected, without disintegrating it, or breaking up its connections, while they blacken all the organic portions of the affected part. But faith must degenerate into credulity, in order to such belief.

Another form of dental caries is often noticed, which is usually whiter than normal dentine, and is characterized, in addition to the color, by the fact that the hard and soft tissues of the tooth are destroyed to almost the same extent, the lime-salts, perhaps, being disintegrated a little more promptly than are the soft ma-



terials. It is worthy of note, too, that the *debris* remaining in the cavity, is plastic—sometimes nearly liquid—so that the greater portion of it can be washed or wiped out of the cavity.

Now, if the immediate cause of this condition is a chemical agent, it follows that it must be one having a strong affinity for all of the tissues of the tooth, yet a slightly stronger one for the lime-salts than for the gelatine. And such a reagent is well known; and it is as well known that it has ready access to the teeth under some circumstances.

But if the primary and immediate cause of this decay is to be found among micro-organisms, it follows that they are able to take and appropriate, for their nutrition, both the hard and soft tissues of dentine, having a slight preference for the lime-salts, yet not rejecting the gelatinous materials. But, as already said, it is a slight strain on credulity to believe that there are organisms, either animal or vegetable, with such appetites.

And if the chemical theory be the true explanation of dental caries, there is still another variety, which is generally called “chemical abrasion,” or “erosion.” None of the varieties are really caries, and the term is as correctly used to designate this, as when used to define the others. There are a few who regard dental decay as a unit, who sneer at the idea of classing erosion with caries, but they live where societies have been sent on missionary tours, and where dental periodicals have not flourished till recently; and it need surprise no one if they have not yet attained to the full light of the glorious gospel of dental truth.

Now, if erosion is due directly to chemical action, the reagent must be able to form highly soluble compounds with all the tissues of dentine, and it must have about equal affinity for the hard and soft materials, as they are dissolved away to just the same extent, and apparently with equal facility. Two such reagents are well known.

But if erosion is due to the immediate action of micro-organisms, they must have equal appetites for the two kinds of tissue, with equal ability to apprehend and digest them, and their excrementitious results must be wholly liquid, so as to be entirely washed away. But it tries faith to believe in such organisms, whether animal or vegetable.

No one holding the chemical theory of dental decay fails to give vitality full credit as one of the modifying circumstances. It



is true that dentine has but a low degree of vitality, while enamel has a still lower one, yet both are alive ; and if so, chemical reagents will not act on them as energetically as on non-vitalized textures of similar character. All who have any chemical knowledge, recognize these principles and facts. It follows, then, that the results of the chemical actions in the two cases will not present exactly the same appearances. And the chemical action will be modified by the texture of the dental tissues acted on, as it will be less rapid on hard teeth than on softer ones. But if, in spite of vitality, hardness and other modifying circumstances, any reagent is able to act on tooth-substance, the chemical results on the teeth in the mouth will be exactly the same as if the same reagent should act on the same materials in the laboratory, or the dentist's office. For example, if calcium phosphate (bone-phosphate) is presented to hydrochloric acid, it is readily, rapidly, and copiously dissolved, in the shop, or in the mouth. And if calcium carbonate, one of the least soluble salts of lime, touches hydrochloric acid, it is rapidly decomposed into calcium chloride, water, and carbonic acid. And this is true whether the carbonate be presented as chalk, marble, bone, or dentine.

A great many, ignorant of the simplest principles known to chemistry, will sneer at a certain class of experiments necessary as a step in the investigation, by rehashing the self-evident truth that "Experiments tried out of the mouth are not tried in the mouth ;" and they look as wise as screech-owls after rehearsing so much wisdom, failing to recognize the fact that if chemical action takes place in the mouth at all, the reactions *must* be the same as would occur anywhere by the action of the same agents on each other. We may get combinations on the bench not obtainable in the mouth, on account of the modifying circumstances, some of which have been already alluded to.

And because I have sometimes referred to bench experiments as a means of throwing light on the nature of reactions that may occur within the mouth, some wiseacres have tried to make the profession believe that I have not experimented within the mouth at all, while I know my older brethren, who were familiar with my professional habits in former days, will believe me when I say that from the summer of 1855 till the spring of 1864, when I went into the army, I gave much more time to experiments in the mouth than was devoted to the practice of dentistry. I have had

as high as thirteen mouths hired at one time, and was carefully experimenting in all of them; and when my books and papers were mainly burned in 1866, the records of over three thousand experiments and observations were consumed with them.

When a man writes, "Acids or Germs? Which?" if any intelligent believer in the chemical theory is certain that he understands the question, and that the inquirer intends that it shall cover the ground from the beginning of decay till the tooth is destroyed, he will answer, "Both!" And if the question referred to the destruction of the carcasses of dead cows, and one would say, "Putrefaction or Maggots? Which?" he would say, both, at least in warm weather.

The action of the micro organisms in dental caries is somewhat analogous to that of the maggots in the putrefaction of the dead carcass. The putrefaction will go on and totally destroy the body, even if no maggots present themselves; but when they are abundantly present, the destruction is much more rapid, and of course the decaying mass varies in appearance on account of their presence or absence. But active as the little worms are, they do not begin the destructive process in the carcass, but all recognize them as secondary agencies.

Similar observations may be made in reference to germs and dental caries. Professor Taft, a microscopist, with an experience equal to that of any in our profession, and with as reliable instruments as any, tells us that, in many specimens of decay, no micro-organisms are observable, even when the disease is active; and other reliable observers bear similar testimony. In some cases of caries the germs present are very few in number, while in others they are very abundant, is the testimony of very many observers, while the progress of the decay is not slow or rapid, in proportion to the germs present. It follows, however, if the germs have any activity, that they may change the external appearance of any specimen of decay.

Let us now inquire if there are any chemical reagents capable of producing the leading phenomena of each of the several varieties of dental caries, and if these are at all liable to come in contact with the teeth.

In the first variety mentioned in this paper, the leading phenomenon is like what is seen in the process called gelatinizing bone. This is done by immersing the bone in dilute hydrochloric

acid. The lime salts are dissolved out, leaving the organic portion of the bone soft and limber. In doing this, the acid decomposes the calcium carbonate (carbonate of lime), forming calcium chloride (chloride of calcium), one of the most soluble salts known to chemistry, and it dissolves, without decomposition, the more abundant salt, calcium phosphate (bone phosphate), with which it forms a highly soluble compound. And while this acid acts with such energy on the lime salts of the bone, it exerts but little influence on the gelatinous portion, leaving it almost intact.

This is the action of hydrochloric acid on *dead* bone, in the laboratory. Dentine is formed from essentially the same materials that bone is. The above sentence as well describes the action of this acid on dead dentine in the laboratory. It follows, however, that an acid may act on a dead tissue, and yet not be able to overcome vitality, so as to act on the same tissue when living. Yet, if it acts on it at all, the action will be just the same in one place as in the other. In the laboratory, the mouth, or the stomach, if hydrochloric acid acts on calcium carbonate, the results are calcium chloride, water and carbonic acid. And this principle is applicable to any chemical action whatever.

In this most frequent, and first mentioned variety of decay, when simple and uncombined with any of the other varieties, as we often see it, we have precisely the phenomena that would be produced by the action of hydrochloric acid on dentine, and as this acid is very often found in the mouth, and indeed, is very often formed therein, it devolves on those who do not recognize its agency in this decay, to show us some other reagent capable of producing the same phenomena. This they have not pretended to do. Indeed, the most industrious, at least the most noisy, have failed as yet to recognize any but a single variety of decay. And some of them spend their main force in trying to persuade dentists that the lime salts are neither dissolved nor decomposed, even in this variety of decay. Imagine a dentist cutting out layer after layer of soft organic, or gelatinous material, from a carious cavity, while a journalist, not a dentist at all, is trying to make him believe that he is cutting out lime salts equal in quantity, and the same in composition, as if he were cutting out equal bulks of sound dentine from beside the cavity! A more amusing scene can not readily be imagined. If the journalist succeeds, the dentist will at once conclude that there is no decay there, and conse-



quently no call for a filling. The same authority has lately modified his teaching somewhat, and now he tells us, "The lime-salts in a tooth are not dissolved in advance of decay, they are there." This we can believe, for sound, normal dentine is "in advance of decay," and not very far in advance of it either.

And just here, in passing, it may be well to notice how much the advocates of the germ theory of decay lack in reference to a knowledge of the chemical theory. Some of them show plainly that, with their present chemical attainments, they are not capable of understanding it. Several of them—one announcing himself as a chemist—have lately made the statement that if acids were the active agents in decay, they would spend their force mainly on the enamel and not on the dentine. But they forget that cohesion (which causes solidity), is one of the modifiers of affinity. Suppose a lump of pure chalk were incased in a thin shell of pure marble, and a small hole were drilled through the marble shell, and the mass were dropped into a solution of hydrochloric acid, the chalk would be rapidly dissolved out, to a considerable extent, before the hole in the shell would be much enlarged, yet chalk and marble are composed of the same ingredients and in the same proportions, but are not alike hard.

The white variety of decay, if caused by chemical action, must result from an agent capable of dissolving or decomposing the lime-salts of the tooth, and at the same time disintegrating the organic portion of the dentine. In this variety we do not find the carious cavity filled with gelatinous matter.

An agent capable of accomplishing all these is found in nitric acid, and I know of no other agent that can simultaneously do so. Through scientific research I have sought for such an agent, and, with tongue and pen, for a quarter of a century, I have asked my brethren to point out one.

But the question arises, can an agent so powerful be brought into contact with the teeth? and I unhesitatingly answer yes, and that in its nascent state, even though the term "nascent" will set on edge the teeth of a popular periodical. Nitrogen and oxygen have but little affinity for each other, yet they combine in several proportions, that one forming nitric acid being, apparently, their favorite one. For example, nitrous oxide is very readily decomposed, yielding oxygen, nitrogen and *nitrous acid*. This tells how this gas becomes diluted by keeping. Nitric oxide, when exposed



to atmospheric air, almost instantly takes two equivalents of oxygen, and is thus converted into *nitrous acid*. This explains its deadly effect when inhaled, even in limited quantities, in connection with nitrous oxide. The hypo-nitrous acid, of the old nomenclature, in the presence of water, is converted into *nitric acid*, and nitric oxide, which, as above stated, is changed by atmospheric oxygen, into *nitrous acid*; and *nitrous acid*, from whatever source, is changed, almost instantly, in the presence of water, liquid or vapor, into nitric acid. Thus it is seen that if nitrogen is oxidized to any degree whatever, the mouth has all the concomitants necessary to promptly change the compound to nitric acid.

It follows, then, that if by any process nitrogen can be oxidized within the mouth, nitric acid must follow as a result, or the laws of nature, which are laws of the unchangeable God, must be suspended. But there is no difficulty here; for oxygen is always present in the mouth, and ammonia very often is. Liebig, and other standard authorities, tell us that, under such circumstances, ammonia is always oxidized, its hydrogen into water, and its nitrogen into nitric acid. The fact that the results of this oxidation, water and nitric acid, have a strong affinity for each other, is called a disposing circumstance, favoring the oxidation.

That ammonia is often present in the mouth, no observing dentist will doubt. It is often readily detected by the odor. True it is often in combination with sulphuretted or phosphuretted hydrogen, when the odor is rendered much more offensive, but these combinations interfere but little, if at all, with its oxidation. Organic matter often putrefies within the mouth, and wherever it putrefies, ammonia is one of the inevitable results, and, as Liebig tells us, the oxidation of the ammonia, if oxygen is present, is just as inevitable.

According to my own observations, when the buccal fluids present a decidedly alkaline reaction, this is generally owing to the presence of ammonia, hence I regard this condition as an ordinary precursor of white decay. Even in the absence of test papers, the approach of this state may be recognized by a tenacious or ropy state of the fluids of the mouth; and sometimes we see a sudden tendency to the precipitation of a soft tartar on the teeth, which is caused by the ammonia taking the free carbonic acid from the saliva, for the want of which it can no longer hold the lime-salts in solution.

Nitric acid, formed by the oxidation of ammonia within the mouth, is of course taken up by combination, atom by atom, as fast as formed, hence we need not search for free nitric acid in the buccal fluids, in order to explain a variety of caries having this acid as its exciting cause; and even if we could so find it, we would find it corroding the surfaces of the teeth, rather than making carious cavities. But though we do not find nitric acid, we may readily find nitrates.

Now, as to the black decay, I have as little doubt that sulphuric acid is its exciting cause as I have of anything else in dental science. This acid is formed in the mouth by the oxidation of the sulphuretted hydrogen, the results of the oxidation being sulphuric acid and water. In cases of poisoning by this acid, it is well known that black spots are frequently observed in the stomachs of the victims. This acid has such a strong affinity for water that it seems to be able to force its elements to forsake other combinations and unite that it may have it. In this way it acts on a cork, carbonizing it by taking its oxygen and hydrogen to form water, and leaving the carbon in a state of charcoal. It carbonizes the organic portions of dentine, forming animal charcoal, giving the distinctive color to black decay.

Now bear in mind that the calcium phosphate in dentine is not the neutral salt designated by this name. Hence it is better to call it bone-phosphate. Now sulphuric acid is not capable of decomposing, nor of dissolving this salt, and in acting on the calcium carbonate of the dentine, it decomposes it as long as it has access to it; but you must take into consideration that this salt is minutely hemmed in by the more abundant phosphate, as well as by the organic matter, and must also bear in mind that even when powdered marble is immersed in a solution of sulphuric acid, though the action begins briskly, it is soon almost arrested, because the nearly insoluble calcium sulphate is deposited on the surfaces of the particles of the carbonate, thus protecting it from further decomposition by the acid. Professor Mayr accidentally told us that it was this variety he was testing when he said he found almost the normal quantity of lime-salts in the decay, in their ordinary positions, and in their normal compositions, as the phosphate and carbonate. And, if at all competent to make an examination, he could not find them otherwise. But having since turned his attention to a different variety, he says, "The lime-salts in a tooth

are not dissolved in advance of decay, they are there." Most certainly. They are *in advance* of white decay, and *in* black decay. But who has ever said they are not? Certainly no one who believes in and understands the chomical theory of dental caries.

There is still another mode by which teeth are destroyed which is evidently the result of chemical action. It is not often designated as caries, yet if the chemical is the true theory of caries, it is entitled to the name as well as is the black or white decay. It has been often called "chemical abrasion," sometimes "erosion;" but I think corrosion is a better name for it than either of the others, and, probably, is the best name we can give it. The destroying agent forms highly soluble compounds with all of the constituents of the tooth; for it dissolves them away to exactly the same extent, and leaves no debris. It makes clean work as far as it goes. The surface of the dentine, in a case of corrosion, is often dense and smooth, as if polished and burnished. This state of surface is probably due to the influence of vitality. The vital functions are aroused, and try to defend the pulp, and hence the subjacent dentine is somewhat consolidated.

In the lists of recognized chemical reagents, but two are known capable of producing the leading phenomena of dental corrosion; and these are lactic and acetic acids. Both of these reagents are often found within the mouth, and any closely observing dentist will see that they have abundant opportunity to do their work. Lactic acid is often, if not generally, found in the mouths of aged men, especially when they are afflicted with a rheumatic or gouty diathesis. It is formed abundantly in the mouths of tobacco chewers, and, probably, by the lactic fermentation of the saccharine substances used in preparing the tobacco.

The presence of acetic acid in the mouth is easily explained. Both the starchy and saccharine substances undergo acetic fermentation. And this often take place at the necks of the teeth of young persons, and we see smooth furrows extending across them. The history of the case, and the constitutional traits of the patient, will generally enable us to determine which of the two is the corrodent.

In all that I have said in this paper, it has not been my intention to consider the predisposing causes of decay. They are very many; yet no tooth is so badly organized that it goes into spontaneous decay. And the microscope reveals defective spots in

both enamel and dentine sufficient to explain why definite spots are attacked, instead of having the whole surface corroded. And still further, the specific excitant is often formed at a definite spot, as, for example, when a piece of muscular fiber is allowed to putrefy between the teeth.

Again, I never knew any believer in the chemical theory of decay, who expected to find the reactions exactly such as would be seen in the laboratory, by the influence of the same reagents on the same materials. They take into consideration vital force, the conflict of different reagents acting simultaneously, and sometimes thus manifesting two or more varieties of decay in the same cavity; and very many of them have for years recognized the agency and influence of micro-organisms, regarding them, however, as exerting a secondary influence, which, I doubt not, is the correct position to take. Of course, when they are not present in any specimen of decay, as Professor Taft and other observers tell us that sometimes they are not, their influence will be absent as well. And when they are abundantly present, it ought to be quite observable, yet still in a secondary capacity.

Much more might be said but your lack of time and my lack of strength forbid. I have not, in this paper, given you authorities on which I rely, nor a detail of my own experiments on which I place still greater reliance. But I have tried to give you the conclusions I have arrived at after long and careful researches and experiments.

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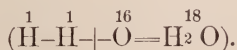
## WATER—HYDRIC OXIDE.

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A LECTURE BY E. J. LILLY, M. D., D. D. S., CIRCLEVILLE, O.

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GENTLEMEN: The subject of my talk this evening is water, or hydric oxide, as it is called in chemistry. It derives the name from the fact that it is composed of two gases, oxygen and hydrogen—two atoms of hydrogen and one of oxygen uniting to form a molecule of water



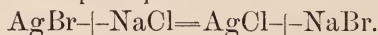
Its formula will therefore be  $\text{H}_2 \text{ O}$ , and its molecular weight 18.

Perhaps, before going further, it might be well to recall to



mind the meaning of several words I shall use quite frequently, the significance of symbols and equations, and why they are written as they are. I will not tire you by going into detail, and must leave unsaid a good many things, because I know you are anxious for the experiments; so I will give simply a condensed explanation.

"An atom is the smallest particle of simple matter which can enter into the composition of a molecule," and it cannot be destroyed. A molecule is an aggregate of atoms—sometimes of atoms of the same kind, as in so-called elementary substances, and again of atoms of different kinds, as in compound substances. All materials are collections of molecules, and in these molecules their qualities inhere, so that what is true of the substance is true of the molecule. The molecule is destructible—that is, it can be split up into the atoms composing it—but the atoms cannot be further divided; and all chemical change consists in the production of new molecules by the rearrangement of the atoms of former ones, as this simple equation will show:



The atom of silver, from the molecule of argentic bromide, combines with the atom of chlorine from the molecule of sodic chloride, producing, as you see in the second member of the equation, a molecule of argentic chloride, which is this dense white precipitate in the test-tube. The atoms of sodium and bromine being left free, combine to form a molecule of sodic bromide, which ends the equation.

Now a word relative to symbols. Just as in Algebra, letters are used to represent quantities, so in chemistry the first one or two letters, of the Latin name generally, are used to represent that quantity of a substance called an atom. Thus O stands for one atom of oxygen, and since atoms have definite weights (as will be explained presently), it also stands for sixteen microcriths of the gas. Fe represents one atom, or 56 microcriths of iron (ferrum), etc. A number placed after a symbol, as O<sub>2</sub>, means two atoms or 32 microcriths of oxygen; Fe<sub>4</sub>, four atoms or 224 microcriths of iron. The exponents do not represent powers, but simply multiples. If it is wished to indicate several molecules of a substance, a large-sized number is placed before the symbol or formula, as 2H<sub>2</sub>O means two molecules of water, 3NaCl, three molecules of sodic chloride, or common salt.

It must be remembered that chemical action always takes place within the molecule. When, therefore, two substances react upon each other the changes which result may be viewed as taking place between single molecules. Moreover, since all molecules in homogeneous matter are alike—and what is true of one molecule is true of any mass of them—it follows that a molecular change represents accurately a mass change, whether of a grain or a pound. In the equation written on the board ( $\text{AgBr} - \text{NaCl} = \text{AgCl} - \text{NaBr}$ ), but one molecule of each salt is represented, though there are millions and perhaps billions of molecules of each compound taking part in the reaction; but it would be simply waste of energy to write them all out, for we would be repeating over and over again the same thing. So it is only necessary to indicate the relative and not the absolute number of molecules playing part in the change.

I said a moment ago that atoms have definite weights, and you may possibly desire to know how the weight of such a small thing as an atom, and consequently of a molecule, is obtained, since there is room enough in a cubic inch of space to allow millions and millions of them to dance around. I will try to make it plain. The starting point is this law—and the law is as much the basis of chemical science as the law of gravitation is of astronomical science—viz.: “Equal volumes of every substance in a state of gas or vapor contain the same number of molecules.” I have already explained what atoms and molecules are. Now it is obvious if a cubic foot, say, of oxygen and a cubic foot of hydrogen contain, according to the law, the same number of molecules, the relative weights of the molecules must be the same as the relative weights of the equal gas volumes. Thus a cubic foot of oxygen weighs sixteen times as much as the same volume of hydrogen under like conditions of temperature and pressure. If then there are in the cubic foot of each gas the same number of molecules, each molecule of oxygen must weigh sixteen times as much as each molecule of hydrogen. The half-molecule of hydrogen has been taken as the standard of molecular weights, the value or weight of which has been called one microcrith; and, as the hydrogen molecule consists of two atoms, it must weigh two microcriths. The oxygen molecule, having also two atoms, weighs twice 16, or 32 m. c. In general, when referred to hydrogen, the molecular weight of any substance in a gaseous state is

twice its density. A cubic foot of nitrogen weighs 14 times as much as the same quantity of hydrogen, its atom must, therefore, weigh 14 and its molecule 28 m. c. I trust what we have gone over has been made clear and that we will now understand each other perfectly.

Water is the most abundant substance with which we are acquainted, and it seems as if the whole scheme of nature conformed to its properties. Always in motion, refreshing, vivifying, it carries on in its circulation the grand processes of the world. Constituting the greater part by weight of plants and animals, it is essential to the existence of organic life. As water of crystallization, combining directly with many substances, and as a menstruum in which the different salts may be held in solution and there deposited, it makes possible those varied and beautiful forms which so abound in nature, called crystals. To illustrate my meaning, here is a large crystal of copper sulphate, with which is combined five parts of water, as "water of crystallization" ( $\text{Cu SO}_4 \cdot 5\text{H}_2\text{O}$ ). Driving this latter off by heat, we have remaining a yellowish-brown mass of granular matter having no external resemblance to the large blue crystal you saw a moment ago. Now if the water is restored to the salt its blue color returns, and, after a time, crystals will reappear.

The molecules and atoms of almost all substances, when allowed free play, build themselves into definite, and, for the most part, beautiful crystalline forms. Iron, copper, gold, silver, lead, sulphur, when melted and permitted to cool gradually, all show this crystalline structure. The metal bismuth shows it in a particularly striking manner, and when properly fused and solidified, self-built crystals of great size and symmetry are formed.

If you dissolve saltpetre in water and allow the solution to evaporate slowly, you may obtain large crystals, for no portion of the salt is converted into vapor. The water of our atmosphere is fresh, though derived from the salt sea. Sugar dissolved in water and evaporated, yields crystals of sugar-candy; alum readily crystallizes in the same way. Flints dissolved, as they sometimes are in nature, and allowed to crystallize, make the prisms and pyramids of rock crystal. Chalk dissolved and crystallized yields Iceland spar. The diamond is crystallized carbon—all our precious stones, the ruby, sapphire, beryl, topaz, emerald, are every one examples of this crystallizing power.



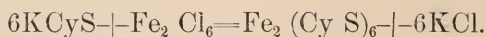
You have heard of the force of gravitation, and you know that it consists of an attraction of every particle of matter for every other particle. You know that planets and moons are held in their orbits by this attraction. But gravitation is a very simple affair compared to the force, or rather forces, of crystallization; for here the ultimate particles of matter, inconceivably small as they are, show themselves possessed of attractive and repellant poles, by the mutual action of which the shape and structure of the crystal are determined. In the solid condition the attracting poles are rigidly locked together; but if sufficient heat be applied the bond of union is dissolved, and in the state of fusion the poles are pushed so far asunder as to be practically out of each other's range: the natural tendency of the molecules to build themselves together is thus neutralized.

This is the case with water, which, as a liquid, is to all appearances formless. When sufficiently cooled the molecules are brought within the play of the crystallizing force, and then they arrange themselves in forms of indescribable beauty. When snow is produced in calm air, the icy particles build themselves into beautiful stellar shapes, each star possessing six rays. There is no deviation from this type, though in other respects the appearances of the snow-stars are infinitely varied. This chart gives a faint idea of some of the exquisite forms water-crystals assume. A cake of clear, pure ice, though apparently so structureless, is made up of an innumerable quantity of these six rayed ice-stars, and you can verify the statement for yourselves by sending through a piece of ice a concentrated sunbeam, when from separate points in the ice little shining dots are seen to sparkle forth. Every one of these points is surrounded by a regular liquid flower with six petals, and they can be easily seen with a common magnifier.

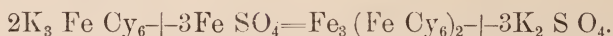
Water in its liquid state is the most indispensable of all the reagents in the chemical laboratory, for it is the medium of a thousand operations, and is involved in nearly every chemical process, as the following experiment will illustrate.

I have on these pieces of paper six different salts. I will take the first two and mix them together—no result follows; similarly with the others. But now if I take the salts as mixed and dissolve them in water, you will notice a change immediately.... see what a beautiful red coloration is produced by the ferric sulphocyanide formed:—

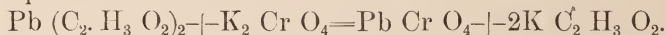




—and with the next what a magnificent blue precipitate, the ferricyanide of iron:—



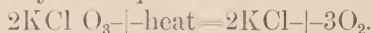
—the last two make this brilliant yellow precipitate, chrome-yellow, or plumbic chromate:—



Now you see the important part water plays in chemical changes. It separates the molecules of the substances, so that being able to move about freely, they can approach each other close enough to allow the reaction to be carried on. In fact, without water, chemistry, as a science, would not exist.

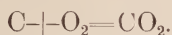
I said at the beginning that water is composed of two gases, hydrogen and oxygen, and you may possibly ask how I know it? The demonstration is easy. This piece of apparatus, which must be known to you all as a voltaic battery, has been in operation now for a couple of hours. One of the electrodes or poles extends under this receiver, the other under the one beside it; and by a process called electrolysis, which I will not stop to explain now, the electric current, as it passes, splits up the molecules of water into their elements, hydrogen being liberated at one pole and oxygen at the other. However, before proving that the water has been decomposed into oxygen and hydrogen, I will give a few experiments with these two gases, so that they may be recognized as such when we come to test them.

Let us first take oxygen—"Lord Oxygen," as it is so appropriately called by Prof. Watt—the most widely diffused of all the elements in nature. It is universally distributed through the atmosphere, about one-fifth part of the air we breathe being free oxygen, and, as I have already stated, forming the greater part by weight of water. It also enters largely into the composition of minerals. The gas can be prepared in several ways. I have obtained some by heating potassium chlorate in the flask, and collecting the oxygen, as it was given off, in this bell-glass. The reaction is indicated by this equation:—

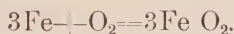


The gas is colorless, transparent, and has neither taste nor odor. It is about one-tenth heavier than air, so I can remove the cover while I introduce this match I have just blown out . . . it immediately bursts into flame again, burning more vividly than

it did in the air, since, of course, pure oxygen is a better supporter of combustion than the diluted oxygen of the atmosphere. The reaction as written out is:—



All substances that burn in air burn with greatly increased brilliancy in oxygen; and many substances, considered incombustible, burn violently in oxygen. Here is a watch spring tipped with sulphur, which I will light and put into the jar . . . it burns with dazzling brilliancy:—



You all know doubtless that combustion or burning is simply the union of oxygen with something else, producing a new substance; the light and heat displayed being due to the rapidity of the union or oxidation. Had the watch spring been allowed to oxidize or rust in the air, the same amount of heat would have been produced—more, in fact, as the oxide  $\text{Fe}_2\text{O}_3$  would have formed—but taking a much longer time, the heat at any one instant would have been inappreciable. But what I particularly want you to remember in these experiments is, that oxygen is a supporter of combustion.

Let us pass now to the other constituent of water, hydrogen—“Lady Hydrogen,” the wife and close companion of Lord Oxygen. This gas was formerly supposed not to exist free in nature, but it does occur free in the gases of volcanoes, and spectroscopic research shows it in the sun, stars, and nebulae. It can be prepared for experimental purposes by decomposing water or steam, or liberating it from other combinations. The metal sodium decomposes water, uniting with part of the severed molecule to form sodium hydroxide, and setting the rest of the hydrogen free:—

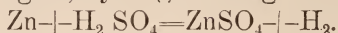


The sodic hydrate dissolves in the water, making it alkaline, as is clearly shown by its turning this red litmus paper blue—characteristic of alkalis. Potassium acts in the same manner; and in decomposition and recombination enough heat is liberated to ignite the escaping hydrogen, which is seen burning with a pale-blue flame:—



The easiest way to prepare it for use, however, is by the action of zinc on sulphuric acid. There are some pieces of zinc in

this bottle, over which I will pour some hydric-sulphate . . . at once the reaction begins, hydrogen being evolved :—



—the equation shows the change taking place.

Hydrogen resembles oxygen in some respects, in that it is colorless, odorless and transparent; but, unlike oxygen, it is a non-supporter of combustion. I will now light the jet . . . the flame isn't very brilliant, though producing intense heat, melting this steel wire readily. You will remember I said combustion, in the common acceptance of the term, was simply the union of oxygen with some other substance; the resulting compound being totally different from its constituents. In the burning of the charcoal or carbon on the end of the match the product was carbon dioxide, or carbonic acid gas ( $\text{CO}_2$ ). In this case, the union of hydrogen with oxygen of the air, the product is water ( $\text{H}_2\text{O}$ ), which you see condensing on the cold dish and dropping off. In each instance the product of the combination exactly equals the weight of the substance burned plus the weight of oxygen consumed.

Hydrogen is the lightest substance we know. By attaching this rubber tubing to the bottle and blowing some bubbles with the soap solution in the pan, you will see how readily they ascend to the ceiling. On touching one of them with the flame the combination of the enclosed gas with atmospheric oxygen is so violent an explosion occurs. The magnificent play of colors seen on the bubble is caused by what is known as the interference of light. The color at any one point depends on the thickness of the film—in other words, the light is broken up by the bubble (you have seen it exemplified in the rainbow many a time), different thicknesses reflecting different colored rays. But as we are not on light this evening, I will not carry the explanation further.

The lightness, explosiveness and inflammability of hydrogen may be shown by this experiment. The gas, you remember, weighs very much less than air, so I will have to keep the jar inverted while working with it. You notice the burning taper is extinguished when plunged into the jar—with oxygen it was just the reverse; as the gas rushes out it inflames, and on reversing the jar there is a slight explosion.

And now if I have succeeded in demonstrating that oxygen is and hydrogen is not a supporter of combustion, and that sub-

stances which burn in the former are incapable of burning in the latter, we will proceed to test the gases obtained by the electric current. Before doing so let us blow a few soap-bubbles with some oxygen and hydrogen I have mixed in the proportion to form water, and show the effect produced when they unite. If you will all be very quiet now you may perhaps hear something (loud explosion)—quite a display of energy for the production of a little water ( $2\text{H}_2 + \text{O}_2 = 2\text{H}_2\text{O}$ ).

This test-tube, which was suspended over the positive electrode of the battery, contains some kind of gas. What it is I will not presume to say, but let us see if we can't find out. I will let this match burn till there is a glowing coal on the end, blow it out and put it into the tube. It burns again just as in our former experiment with oxygen; and on pouring a little lime water into the tube and shaking, it turns turbid, showing the formation of calcium carbonate. So we can say, without much hesitation, that the tube contained oxygen:—



Let us repeat the process with the other tube. It acts in a decidedly different way. The match, instead of burning brighter, goes completely out, the gas inflames at the mouth of the tube, and on turning it up a very slight puff indicates an explosion—phenomena identical with those hydrogen gave us. So we have proved, as clearly as possible with the apparatus at command, that water consists of oxygen and hydrogen gases.

And now that we have obtained these gaseous substances from water, let us try the reverse process, taking the dissociated gases, uniting them again, and thus obtain the same substance with which we started. In this glass tube, called a eudiometer, there are oxygen and hydrogen obtained by electrolysis, in the same manner as you have witnessed this evening; and as I used electricity to separate them, I will employ the same medium to induce them to recombine. This piece of apparatus is called a Leyden jar, or electrical accumulator. It consists of a glass bottle or jar coated on the inside and outside with tin-foil, the interior being connected with the exterior by means of this wire projecting from the cork. The jar is useless of course unless charged with electricity. As I had no electrical machine with which to accomplish this, I made one which answers the same purpose, that is, it will develop electricity, as you see it doing now, the spark leaping



from the generator to the jar, thus charging it. The machine is called an electrophorus (any of you can make one with a little care), and it very efficiently illustrates the principle known as the "correlation of force." Thus the chemical energy stored up in the food I ate for supper has been changed into mechanical or muscular energy, which latter I am directly transforming into electrical energy in charging the Leyden through the electrophorus. Now the jar is about charged, and when I touch one of the little platinum points in the end of the tube with the knob of the jar (the other point is connected with the external coating through the chain), the stored up electrical energy will be transformed into heat in the connecting chains, and into light, heat and sound in the disruptive spark; which latter will leap from point to point through the tube, and in its passage the heat developed will decompose the molecules of the gases, leaving them free to combine—or, technically, in a nascent condition—and immediately that is done they will reunite, chemical energy being again developed, ending, as it began, the series of transformations . . . the result is accomplished, the product being *a drop of water*.

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## HALF BREED MICRO-ORGANISMS.

BY PROF. C. M. WRIGHT, CINCINNATI.

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[Written for the Ohio State Dental Journal]

SEVERAL of my friends have become convinced from much that has been said in Dental Societies, and much that has been written on the subject, that the micro-organisms found in the mouth and in cavities of decay in human teeth are *animals* and not *vegetable* forms of life. Believing this to be an error, or at least not in accordance with the *generally accepted* views of advanced modern students of these low forms of life, I beg leave to say that, though the line of demarkation between the animal and vegetable kingdoms has been shifted about a great deal, and is not very distinct at any time, yet for certain reasons, the forms of life that we have been interested in—the bacteria, etc., are now classified by most observers as belonging on the *vegetable* side of the line. It was once believed that living action could be exhibited only by organized structure, but now we know that all the functions of life may be carried on by minute "jelly-specks," in

whose apparently homogeneous, semi-fluid substance, nothing like organization can be detected. We know also that in the highest organisms the *essential* part of life-work is done by the same material that is found in the "jelly-speck." The higher organism is only the mechanism, the structure through which this substance exerts its wonderful properties. Huxley has called this protoplasm, "The Physical Basis of Life."

The microscope has made us acquainted with a multitude of minute and simple forms of life, which are essentially particles of protoplasm, each kind having usually a definite shape and size, and showing to the careful observer, some distinctive character or habits of life as we learn more about them; how they grow; how they multiply; where they thrive, etc., we learn from their habits of life, to distinguish them as vegetable or animal in character. We can classify them as living plants and living animals, as we can plants and animals that do not require the microscope for their observation. The distinction is very fine sometimes, we must admit, as in these low forms of life, the line as we have said, is not so distinct; cannot be, from the nature of the case, and especially, as the forms whose life history interest us, partake, to a certain extent, of some of the attributes of animal, as well as vegetable life. They might almost be called *half-breeds*, from their life on the border land between the vegetable and animal kingdoms. By selecting a cell, or simple form, and cultivating it, a complete life-history can be made out. The bacteria in common with many others, have received this special study, and have been set down (by some authors) as belonging to the fungi. Five varieties or rather types have been recognized. 1, micrococcus; 2, bacterium; 3, bacillus; 4, vibriones; 5, spirillum. These are very low or simple forms of the group of fungi, and perhaps the simplest type of vegetation representing the simple cell. They belong to the protophytic fungi, and the group has been named the Schiromycetes. Beale calls this a distinct class from the fungi, but acknowledges its vegetable character. They thrive best in the midst of decomposing or decomposable organic matter. They appear to relish and utilize such products. They are aquatic in their habits, and show some varieties according to the media in which they live. They differ from green plants, in not being able to form carbon compounds by the decomposition of carbonic acid, and requiring for their support carbo-hydrates or their derivatives. They re-

semble ordinary plants, however, by the power they possess of forming out of ammonia, *nitrogenous compounds*, which animals cannot do.—Carpenter. They consist of minute cells. They multiply by sub-division. Most of them have the power, at least at some stage of their existence, of swimming about, more or less rapidly in the liquid they inhabit. Tyndall and others have shown that the bacteria, bacilli, etc., have wonderful powers of resisting cold; and certain degrees of warmth or heat. Their power of spontaneous motion, and their appearance in the field of the microscope have, perhaps, caused the belief in their animal character, though *motion* is not distinctive of animal life—witness the desmids and diatoms. Perhaps the clearest reason for their classification among the vegetables is the character of their *nutrition*. This may, perhaps, be taken as the most generally applicable characteristic upon which the classification of these border-land organisms, that most closely approximate to one another, may be made. If we find a low form of life, depending for its nourishment upon *organic compounds already formed*, which, in some way or other it takes into its own body, we admit that this, though not an *absolute*, is yet a *general* characteristic of the animal kingdom. On the other hand, if our little cell possesses the power of *producing* the *organic compounds* at the expense of *inorganic elements*, with which it is supplied by air and water, and applies these for the increase of its own fabric, we acknowledge that this is a prominent attribute of the *vegetable world*. If the vegetable had not this power, what would become of animal life? There are, however, certain plants which resemble animals in their dependence upon organic compounds prepared by other organisms. There are plants that are unable themselves “to effect that fixation of carbon, by the decomposition of carbonic acid of the atmosphere, which is the first stage in their production.” This is the case among the entire group of *fungi*, though, however, the fungi seem generally to depend rather upon organic matter in a state of decomposition—many of them having the power of *promoting* by fermentation, that process.

Then there some animals in whose tissues starch, cellulose, chlorophyle, are found. This is a characteristic of *vegetables*. It has not, I believe, been proved that the animals in whose tissue these organic substances have been found, really *generate* these compounds for themselves, by the decomposition of carbonic acid.

From studies of the life histories, and the nutrition of these lower forms of life, our micrococci, bacteria, bacilli, etc., have, from their effect upon the balance in this tiny scale, been set down on the *vegetable side* of the delicate and wavy line of demarkation. They are in English, "funguses,"—"microscopic fungi." Modern scientific writers accept the classification of the observers. It is, perhaps, only the popular idea, that they are "bugs" and have teeth, or gimlets, or augers capable of boring into the hard enamel etc. It is, perhaps, only the popular dental idea, that enamel rods may become Aaron rods, and turn into serpents before the lenses of the microscopist, or that the canaliculi are harbors for immense fleets of aquatic battering rams that will not rest in haven, but must batter down the quays and produce general destruction. Theories in regard to pathological conditions of the teeth built upon such uncertain foundations, cannot stand, and are only confusing obstacles in science's path. Elementary studies in the botany and zoology of the microscopic Garden of Eden, should *precede* the erection of pathological hypothesis.

Permit me to quote two of the conclusions, No. 5 and 6, from Dr. W. D. Miller's paper—one of the very best, by the way, that has ever graced our dental periodical literature on this subject, and is worthy of the careful attention of every student—The quotation proves that Dr. Miller, in January, 1883, accepted the classification as *fungi* of those micro-organisms.

"5. The fungi produce anatomical and pathological changes "in the deep layers, stop up the canaliculi and necessarily lead, "sooner or later, to the death of the dentinal fibrils. The outer "layers of dentine, thereby deprived of nourishment, die and fall "a prey to putrefactive agents.

"6. The invasion of the fungi is always preceded by the ex- "traction of the lime salts."

There are a very large number of vegetable organisms of simple structure found in the human body, in health and disease, on the surfaces, in the fluids, in internal tissues and organs, into which the germs must have previously penetrated. Wherever animal or vegetable matter (be it healthy or diseased) is undergoing disintegration and decay, low organisms grow and multiply. Lionel S. Beale, in "The Microscope in Medicine," says of the mode in which fungi gain entrance into the system of living beings: "Vegetable organisms, found even in the substance of the



"inmost tissues, result from the development of germs introduced from without. Since we know that the germs of many *entozoa* make their way very readily through the tissues of the organism, there is no difficulty in explaining how bodies so very much smaller than these, *as the germs of the fungi*, are introduced. These germs have the power of insinuating themselves through the firmest tissue, and multiply in number as they make their way through."

He believes "that there is reason to think that often they possess individual powers of growth and multiplication, *long before they have grown large enough for us to see them*, even with the aid of the highest magnifying power we possess"

In referring in the same work to the question of this paper, Dr. Beale says, on page 498, "Even the vegetable nature of fungi has been called in question by some, but it would be absurd to reply to those who entertain such utterly untenable opinions."

Bilroth says: "Foul air is always associated with the development of minute elementary organisms belonging to the *lowest vegetable species, microscopic fungi and algae*. They are sometimes minute globules (*micrococcus*), sometimes minute rods, (*bacteria*), etc.

"In putrefaction they play the same part as the *ferment fungus* does in the fermentation of the juice of the grape, and many other fruits; they are the so-called ferments which induce putrefaction of the juices of the body."

Prof. Cassidy says in a late paper, "Bacteria cannot construct protein, from the mineral kingdom."

I could multiply quotations to an almost indefinite extent, but have probably said enough to call in question, at least, the popular idea of the purely *animal nature* of bacteria, etc. The incredulous student who does not respect modern authorities, may consider them as *half-breeds*, as we do the mixed races of our Indian borders, in whose blood traces of white and Indian can be found in unequal and varying proportions, and who are surely neither Indians nor whites. The subject of these lower forms of micro-organisms, is by no means a settled one. New light may be thrown upon them any day by some of the patient investigators; but it seems to me, that *now* the weight of evidence, classifies correctly the bacteria, as belonging to the *garden* and *not* the *menagerie*.

## BRIDGEWORK.

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BY DR. J. E. LOW, CHICAGO, ILLS.

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In the June number of the *Dental Cosmos* of 1883, page 287, I find the starting point of an explanation of the so-called bridgework, by James E. Dexter, M. D. S. This explanation was in the closing remarks of a paper, of some length, under the head of artificial crowns, said paper having been read before the First District Dental Society in the State of New York. The article spoken of I do not propose to discuss here, but as before stated on page 287, where he says, "let us now proceed to what is called bridgework or the union of several teeth by a band or bar to natural ones situated some distance apart, (or to roots so situated) without the gum plate necessary to the ordinary form of artificial dentures." From this point to the end of the paper I wish to call the attention of the reader. That the pretended explanation is calculated to mislead, leaves but little chance for doubt.

To more clearly show the inconsistency of his remarks made about bridgework, I will call the attention of the reader to the first page of the June number, where he says, "that pivoting must be considered (when properly practiced) as the best method for the insertion of dental substitutes." "That there are thousands of failures in pivoting, does not detract one iota from the force and truth of this assertion." "There are more failures in filling with gold than pivoting, but shall I conclude therefore that gold filling is not to be practiced?" That is good, and I am willing to accept his conclusions here drawn as just and liberal, but I wish to draw a line of distinction arrived at between the two kinds of work, and the only solution of the difference of opinions upon the two methods is positive proof to me that he is not familiar with bridgework, for in every thousand teeth put in by me on the modern bridgework not over one failure will occur, and I defy any one setting crowns to show such a record, both methods being equally essential to prevent losing the natural conditions.

Any person with common sense knows, that where he has a dead root to prepare for every tooth inserted, there are more chances for failures than where there are less or perhaps no dead roots. But he says, though there are thousands of failures in

pivoting, that does not detract from the force and truth of his assertions. Why this marked confidence in crowning if (as he says) thousands of failures occur, when in bridgework very few if any occur when properly constructed?

Returning to page 287, where the writer refers the reader to cut 46, there are six front teeth in a block, carved from the hippopotamus' tooth (or supposed to be), with two screw pins screwed into the block opposite each lateral incisor, which shows to any practical mind, it was intended to be held in position by two roots, correspondingly opposite or under these lateral incisors. The writer states that this work is a hundred and fifty years old, but he has never seen the original work, strange to say. He further states, "that through the kindness of Dr A. L. Northrop, he was given access to a curious book, composed of Dutch, German, French and Old Latin, often entirely meaningless to the modern reader, and often so obscure as to render correct interpretation a labor of very great uncertainty." It must have been a great treat to have had access to so valuable a description of what he claims is an exact representation of the modern bridgework. He says, "these were very excellent plates, (referring to 46 and others) made in Berlin in 1733," and on the next page, 288, he says, "this is the earliest bridgework I have been able to find; yet I have lately seen some and heard much more of work, which differs from this," mark the words, "only it being constructed of gold and porcelain, and which is claimed as a new thing and a great discovery." Now let the reader turn to page 287, where the Doctor says, "let us proceed to what is called bridgework" and examine the cut No. 46, given here, which he says is like the



46

modern bridgework, and see how correct his statements are. In the first place there are neither bands or bars visible, as stated. Then again no attachment is made like the modern bridgework, and there is no evidence that it was bridge-work, but on the contrary, every indication from the cut seen, would indicate that this crude piece of work was set close on the gum and was held there by two screws. We could as consistently say, that the man who laid the first plank across a stream, conceived and embodied all that there now is in the ingeniously constructed suspension bridge of to-day. Will the Doctor tell us



how he would supply the loss of one, two or more teeth (with this old time relic) cut 46, where there are no roots and the remaining teeth are in a perfect condition? By so doing we can tell how it resembles the new bridgework. That the reader may fully understand the position I have taken, I here give a cut of what is termed "The Low Method," before and after having been operated upon. The following cut No. 1, represents an upper

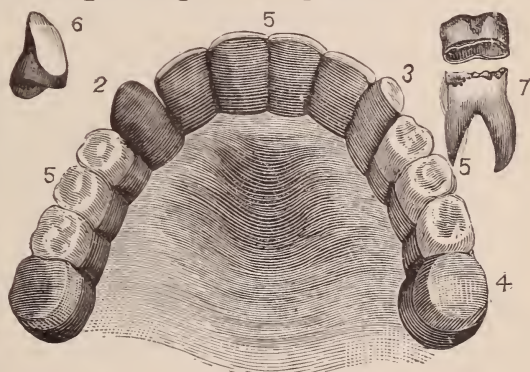


*No. 1, Before.*

1, 2 and 4, Roots.

and instead of making a bridge the gums are perfectly fitted by

a struck up plate being very narrow, just bearing on the ridge only. This fixture is held in close contact with the gum by the attachment to the teeth or crowns, rendering it impossible for food to get under; consequently it is perfectly clean. The support is equalized on the gums and



*No. 2, After.*

*No. 6, Crown, Porcelain Front.*

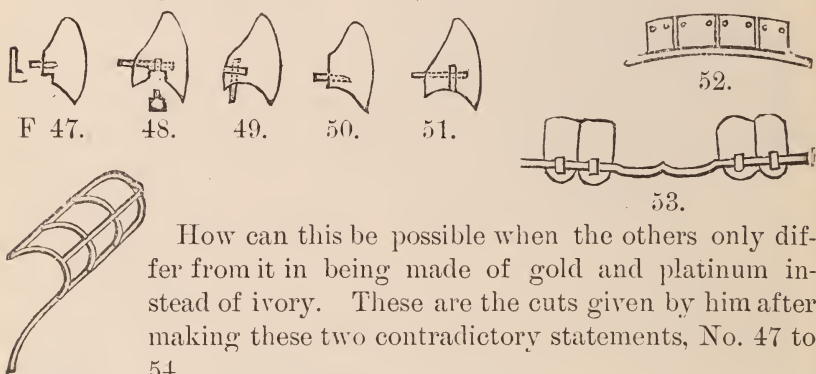
*No. 7, Molar Crowns.*

teeth in this way, and the patients claim they feel more natural than when left open. It was not my intention to fully describe the method here; but those who would like to know all about it can do so by applying to me. I will send them a book I have



just published, wherein they get a full and minute description of what is called bridgework.

It has become chronic among dentists to misrepresent every new invention, or to say "Oh! that has been used before; and was invented many years ago," and similar remarks made to a patient who knows nothing about it, oftentimes has an effect for the time being in their favor, but it will not do for a man to set himself up as an expert and make statements in print for men to read that know they are false. I give here several more of the Dr.'s illustrated cuts of bridgework, which he says more closely resemble the bridgework than the 46th cut.



How can this be possible when the others only differ from it in being made of gold and platinum instead of ivory. These are the cuts given by him after making these two contradictory statements, No. 47 to 54.

54. Those wishing to read the explanation referred to with cuts can do so. I think I can consistently appropriate his words in speaking of cut 46, where no description is given, when he says, "while the pen is thus silent the pencil can speak all languages. I think these cuts reveal to any intelligent reader, that it does not resemble in any respect the modern bridgework."

These cuts remind me of an incident from which a good comparison might be drawn. While traveling in the interior of Mexico some years ago, in that lovely climate, where birds of beautiful plumage and sweet songs, were jointly wafting their music through the air, amid the profusion of countless varieties of flowers and blooming trees, and perpetual sunshine, a country where nature had fully bestowed her best gifts; one morning instead of having my dreams made more harmonious by the sweet singers, I was suddenly awakened by a screeching, squeaking noise. I immediately arose and looked out of the window to see where it came from, when to my surprise I saw coming around

the corner, five or six ox carts loaded with wood. The drivers stopped to wait for customers. I immediately dressed myself and hastened to the spot. Upon examining the carts I found they were what I imagined the aboriginal carts to have been. A more crude arrangement could not be conceived. The hubs were made by sawing off a tree the size of a butter firkin; holes were made through them for the axle which was made of heavy wood; the spokes and fellies were held together with wedges. The yokes were wood fastened to the oxens' horns with strips of hide. I tried to find one piece of iron about them, but did not succeed. The noise was produced from the moving of the carts without greasing the axles, as they never greased them. That these were two wheeled carts, no one will dispute; but how would it look to compare them with the two wheeled vehicle of to-day used for pleasure riding in our cities? It would be as reasonable as to compare those old-timed relics of the hippopotamus' tooth and other cuts shown, to "Low's New Method." On page 287, he says, "The only point of distinction between this old-timed bridgework and that of the present day, rests in the usage shown in the Bing-Litch-Webb description of filling the connecting or supporting structure into the natural tooth and in the absence of the struck metallic caps (over natural teeth) of Drs. Morrison and Beers, which have long been in use for the purpose of attachment of intervening series of artificial teeth." Now then, in the description of the first cut, 46, he says, "the only difference between this and the new bridgework is, that it is made of gold and porcelain instead of ivory." In the second description he says that this more closely resembles the new bridgework than the other, and still further he says, "the only essential point of distinction is the Bing-Litch-Webb description, the absence of caps over natural teeth;" and he states, "that Morrison and Beers' metallic caps have long been in use for the purpose of attachment of intervening series of artificial teeth." Why did he or some one else not tell Morrison or Beers to attach teeth to them? They did not know that they had made them for that purpose, and the fact is that they did not put them in for that purpose, but supposed that they were conferring a great blessing on humanity for being able to restore a root to usefulness, which supposition has been fully realized, but nothing further. In fact no teeth were ever put in or attached to crowns in this manner until I adopted this method; and not only

attaching teeth to crowns, but where the natural teeth were intact with natural crowns. I conceived the idea and successfully worked out a system whereby bands could be used to support artificial teeth, thereby doing away with the use of a plate. When I speak of a band, be it understood that I mean a piece of gold entirely encircling the tooth, and not a band or a bar as the Doctor describes it. He says on page 290, in speaking of the Low Method, "that clasps are fitted around the teeth." I never use clasps or bars. A bar ceases to be a bar when it is thin enough to be used as a clasp. One would suppose by the way he speaks, that bars, bands and clasps were the same thing. He says the Low Method is objectionable in three important particulars.

First, "the pseudo-permanency of the bands ; Second, impossibility of repair, except at much trouble and damage to the denture or natural teeth or both." Without arguing these points I will simply state, that when properly adjusted, these teeth are easier kept clean than the natural teeth, and no injury to the natural teeth need occur in repairs as stated. Why did not the Doctor speak of its advantages over the ordinary way of putting in teeth with plate, and draw a balance, giving credit where credit is due? There are numerous objections to the wearing of a plate, and some of them are very serious. I will not state them myself, but prefer to quote the language of other dentists who stand high in the profession and who have put themselves on record in speaking on this subject.

Prof. Judd says, "That not one person in a thousand wearing rubber plates but will be found suffering from inflammation of the mucous membrane." Dr. Walker says, "These rubber plates cause thickening of the mucous membrane; inflamed spots appear, growing from bad to worse, until they look like half spoiled beef cut across the grain." He also says, that aside from their action on the mucous membrane, they cause the absorption of bone, which results in breaking down the processes." Dr. Morgan says, "I have seen but few large artificial plates which did not give trouble. It is not the natural condition of the mouth to be covered. Nature did not provide for the wearing of an artificial roof." He further says, "I have not observed diseases resulting from rubber plates any more than from the use of others. I have seen the same from platinum, also from gold." Dr. Kulp says, "I and my professional friends examined 1,000 cases, in three-

fourths of which disease was found." He says, "I have seen the worst results from silver. It is an unnatural condition of the mouth to be clogged." Dr. Jones says, "I am not an advocate for the rubber plates, but I have seen worse results from gold than from rubber." Dr. Forbes says, "My judgment is that platinum plate will excite more inflammation than anything else." Prof. Judd: "There is no one engaged in extensive practice who will not find cases of daily occurrence. I have seen the worst case of necrosis resulting from them. I have seen the palate, vomer and nasal bones entirely destroyed by them." Dr. Taft: "The aim should be to prevent disease." Dr. Cutler: "When a dentist extracts the teeth he converts the mouth from a physiological into a pathological condition. Is this all a dentist can do? If so then God deliver the human race from these professional quacks and humbugs. If we could after extraction restore the mouth to its original condition, that would be conversion from a pathological condition to a physiological condition. But this you do not do when you put in your miserable substitutes or plates of any material."

Dr. Atkinson: "I am glad of all this discussion. Let us try to be delivered from this thralldom of darkness and be brought into the light and truth." He says, "I began by studying divinity, then medicine, then dentistry, and I contend that I have been raising all the time. I have arrived at the truth. It comes to us like a voice from above, that we extract no more teeth. We first break the law, and rush in where angels fear to tread, and try to mend it."

In the Mad River Valley Society, Dr. C. W. Wright recently spoke of the advantages of restoring roots, thereby preventing unnatural conditions of the mouth. "Although thousands upon thousands of persons were going to and fro in the world, with the roofs of their mouths—their hard palates covered with rubber or metal and not complaining, he thought it could be proved by good physiologists that a part of the great function of digestion is in a measure interfered with. The tongue is the great organ of taste, but the most exquisite sensation is produced just before deglutition and after insalivation. The tongue presses the morsel of food against the hard palate and this seems to be essential to the perfection of the taste. Now, taste for food is a physiological necessity, and if it is impaired, he thought he did not need to go far



to prove that the process of nutrition is to a certain extent crippled. He thought it possible that dyspepsia in the world is caused by a want of proper taste and insalivation of our daily bread. He would admit that life could be sustained by artificial means; that he could keep a man tolerably chipper by forcing food into him through a syringe or tin tube. But the highest health, he maintained, demands that all the functions shall perform according to their original designs. He did not think it was the original design, that meat, and bread and fruit should be switched about the oral cavity with the tongue, punched and indented slightly by porcelain teeth, squeezed up against a rubber plate and swallowed. And if this is so, he said, the man who helped us to save roots and crowns and to dispense with false palate, is a benefactor to his race, and the dentist who exerts himself the most in this conservative surgery is the best dentist and is doing the most good and has the highest idea of his work." I think if we draw a balance without giving further evidence, there will be a large majority in favor of the new process work, though the story has not half been told. In conclusion let me say something in regard to what Dr. Dexter says about devising a change in the Low method, which consists of loose caps to sit over the teeth supporting the fixture. This was one of my first experiments, and one I soon abandoned for two reasons: First, because the teeth so attached to soon became tender, more so than when put in with the old clasp plate. The patient protested against its use, on account of pain when adjusting it, as well as while eating. Then again, I discovered something better, so, of course, adopted it.

The Doctor is on the right track and no doubt will soon be a strong advocate of the no plate system.

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## WHERE SHALL I LOCATE?

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BY QUERULOUS.

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By virtue of a varied experience of practice in a small town, then in a small city, and finally in a large city of the first-class, the writer ventures to express his views on a subject presumably of absorbing interest to the young graduate.

The idea has long prevailed that the larger the city the greater the inducements for the beginner to start in practice. Let

us consider then, the advantages as they present themselves to the mind of every observer, and also the disadvantages that are discovered by actual experience of the city. The young dentist reasons perhaps as follows: The city dentist has a more appreciative class of patrons and commands better fees than does his country cousin; his work is less disagreeable in the main, because his patrons have some pride about keeping their mouths sweet and clean; they are accustomed to having their teeth operated upon and consequently are better trained to endure the unavoidable annoyance and pain of operations; the habits of punctuality which business men acquire render it comparatively easy for the dentist to collect his bills; and finally, the superior facilities for transportation render it more convenient for ladies to keep their appointments in inclement weather. Admitting all of the above, it is evident that cities offer the most inviting field to the aspirant for an operative practice. Passing over ulterior considerations, such as might be enumerated among the advantages of city life, to any individual (be he in or out of the profession), the inquirer goes on to consider further the opportunities for improvement arising from association and contact with representative men in the profession; the convenience of access to dental depots, etc., etc. The picture stands complete in all its alluring colors, and the young man says to himself, "No country practice for me."

To one of sanguine temperament the difficulties which lurk in the back-ground of this picture do not appear formidable. A man must encounter obstacles in making a start, wherever he locates, says the young graduate, by way of preparing himself for the inevitable. He who shivers on the brink, ever hesitating to make the plunge, will certainly never cross the flood. Very true. A spirit of adventure is assuredly commendable. Nothing ventured, nothing gained. But to venture into the torrent without carefully estimating one's ability to cope with the swirling eddies, were surely the consummation of folly. Let us now look at another picture.

The cities are already crowded with dentists, many of them men of first-class qualifications and unquestioned skill. It may be stated as a fact that those of the population of cities, who patronize dentists at all, are sharply divided between the compara-

tively small minority who furnish operative practice, and the great majority who throng the parlors of the steam-dental establishments. We remark in passing that notwithstanding the suspicion with which these same steam-dental establishments have ever been regarded by the "regulars" of the profession, there is reason for believing that some of them employ really good operators, and plate workmen of no mean attainments. If we are wholly wrong in this opinion we are willing to be convinced of the fact. Not to discuss the matter at length, we hereby stand committed to the statement that in this city, at least, the young man who at present ventures the undertaking of establishing himself in practice, will need to inquire far and near to find the individual (whose patronage is worth consideration) who is not prepossessed in favor of some already-established dentist. In other words, he who seeks a practice in almost any one of the large cities, has this alternative; he must either attract the patrons of older established dentists, or set himself resolutely about the thankless task of educating those who at present think they have no use for a dentist.

We do not wish to discourage any one. We are well aware that competition is not confined to the large cities. But let no one be led away by the enthusiasm which is inspired by the evidences of wealth in crowded communities. Young man, if you have means to tide you over the years of anxious waiting, if you have social qualities which will enable you easily to make acquaintances, if you have health and endurance for the hours of unintermittent toil over your chair, in a close room and deprived of fresh air, perhaps we ought not to discourage you. But if you are fond of a dog and a gun, and of out-of-door recreation, and of working in your garden, consider well before you venture. You may discover, as others before you have discovered, that the superior privileges of a city practice cost more than they are worth.

It is a curious fact that so many people who start out to investigate before committing themselves to a cherished project, unconsciously avoid a full and impartial consideration of disagreeable features which threaten disaster to their preconceived notions. How many who walk the streets of cities, viewing on all sides the evidences of prosperity, stop to consider the disappointments, disasters, and out-and-out failures that have occurred,

leaving no visible trace? How many are aware that among the thousands of professional men in cities; lawyers, physicians, dentists, twenty barely manage to exist where one or two attain to anything like prosperity?

The truth of the matter is, it is getting to be more and more difficult every year to gain an honest living in the densely crowded cities. Competition has become so fierce that men in mercantile circles admit that there is now very little chance to make a fortune in legitimate trade. A lawyer recently remarked to the writer that in our city courts the corruptions which have crept into the jury system are extremely discouraging to lawyers who seek justice for their clients. Fortunately for us of the dental profession, it is not possible for unscrupulous competitors to successfully mask their dishonesty. Incompetency will out.

There is one feature of dental practice in the large cities which has of late years assumed an aspect of such importance as to demand fearless and impartial consideration. We have reference to the growing influence of the much berated steam-dental establishments. Time was when none but the poorer classes patronized these institutions. Let any man who is wide-awake and willing to know the truth inquire whether they are to-day patronized by the wealthier classes,—by those who discriminate between skillful and bungling operators. The managers of these establishments are not blind nor neglectful of opportunities. Some of them, many of them, employ first-class operators and plate workmen. Let any one carefully and patiently investigate and see whether or not dentists of respectable standing in the profession are to be found who are daily turning out plates and making fillings which will not bear comparison with work done in these much ridiculed establishments.

It is not the writer's business to apologize for or defend these establishments. The object of this article is to point out to the young man, whose eyes are turned towards the city, what he may expect in the way of competition. These cheap establishments have their thousands upon thousands of patrons, drawn from distant towns and villages many of them. Let us face the fact. But now again, for the encouragement of the inquirer, let us consider wherein the dentist who conducts an office on a more private, exclusive plan, is enabled to hold out inducements to a certain class



to give him their patronage. The writer has been surprised to observe that not a few of the wealthy class,—people of refined tastes,—in the city where he practices, are willing to present themselves at offices where the patient is seated in a chair, one of a row of a dozen or more, and while undergoing a dental operation consent to have a throng of young men stand by and receive instruction as at a clinic. Of this we have no complaint to make; it is a question of taste, merely. There remains, however, a large class of people whose ideas of propriety and delicacy differ from this; who appreciate the privilege of seclusion during an operation on their teeth. If conditions meet their approval they may patronize you. You must study their requirements. The quality and pattern of your carpets and the style of your furniture (or of *yourself*) may influence them. It is useless to quarrel with their tastes. If they learn that you work for a poor, though respectable class, they may perhaps pass you by. Remember we are speaking of conditions as they exist in cities; not as you might wish they were. People are both more aristocratic and more democratic in the city than in the country.

Another consideration: It may be stated, as a reasonable presumption, that you will not for many years, in case you locate in a city, gain the patronage of the wealthy class. The cities are well supplied with skillful dentists of reputation. Do not overlook that very significant fact. We only lately heard a young city dentist—six years established—say, “the business is all in the hands of the older men.” The speaker is one of the finest operators in the State. He is wide awake, industrious, and progressive. Remember, we are only showing that to get ahead in the cities requires capacity for long and patient waiting. You will need to measure your qualifications and skill by those of scores of others who are straining every nerve to gain prominence. Fine operators are beginning to be almost as plentiful as base-ball experts. This is an age of progress,—and of hot competition. It is to the disadvantage of the city dentist that he must be centrally located, where the rents are high, and must furnish his rooms elegantly if he hopes to attract the attention of the wealthy class. He can hardly secure a first-class practice in second class rooms. A lawyer need not fit up expensively; a physician may do a flourishing business in a plain suit of rooms, for his driving outfit adver-

tises him. Hardly so with the dentist. It will cost you more to rent two or three desirable rooms in a city than to rent a good sized dwelling in a town. We know, for we have done both.

Dozens of fine dentists have gone to the cities, there to remain a few years, and then disappear. They are not seriously missed either. Scores of others have achieved success, after long waiting, only to find themselves unequal to the severe demands upon their strength and endurance. Still you may succeed. The dentist in town or village not unfrequently acquires, at least, a modest competency. How many city dentists do as much?

The great trouble with dentists in the smaller towns is probably their lack of business habits and training. Prosperity must be cultivated. No man in any calling can succeed, unless he learns the secret of making something out of what many would regard as nothing. If you are vigilant and energetic, you can make business; you can create opportunities. This woman needs an artificial plate. You may need to talk with her a long time before you succeed in convincing her of the fact. That is not unprofessional. You are doing her an incalculable service.

One dentist will work only for a cash consideration; another is willing to take wheat or corn or poultry. That is also a question of taste. There is nothing in our code of ethics to prevent a man's engaging in the huckster business if he chooses. It is not half so disreputable as defrauding one's tailor, or the dental depot.

A young dentist was ungenerous enough recently to hint that codes of ethics are designed to bar out the beginners from competing with the old established dentists. Hardly so, we think. But if on examination, it should be found that the codes exceed the limit of restricting members within such bounds as good common sense and propriety prescribe, let them be revised, by all means.

Theoretically, a city practice has some advantages over a country practice. The well-established city dentist may devote his attention exclusively to operating, relegating plate work and extracting to other hands. Practically, there are very few city men who are sufficiently independent to be able to afford to sacrifice these sources of revenue. Many hire assistants; but this consumes the profits.

The writer once tried the experiment of opening an office in

a small town where he was an entire stranger. Not a soul in the place had he ever before seen or heard of. He remained there two years and made a good living. There are plenty of wide-awake, growing towns in the West where dentists are needed. Only a small capital is required. A man who is at all energetic ought to be able to make a living, and even save money in one of those places. Expenses are merely nominal. Say what you may about its all depending upon the kind of man; the man of energy and thrift will do better in one of those towns than he can hope to do in the great centres of competition. Select a place where there is some activity in trade or manufacture, and you cannot but succeed if you have any go-ahead in you.

It is very trying and discouraging to sit in a country office day after day with nothing to do, almost as trying and discouraging as to do the same thing in a city office. If you won't say anything about it, we will tell you that we have seen some of the old established city men with incomes varying from ten thousand to thirty thousand dollars (as reports go), doing this very thing. But you will have this consoling reflection; you will probably never be worked half to death (not to say *entirely* to death), you will be able to make a good profit on the mechanical branch of your profession, and if you are compelled to do considerable extracting you ought to consider that there is no such clear profit in any other department of practice. The country dentist has many important advantages. He has more time to enjoy life, to go out into the fields, to hunt, and fish, and play ball, to drive, and row, and sail. If he earns less money he needs less. We know, personally, two men who for years practiced in a large western city, having large patronage, both of them. One of them retired to a smaller practice, in a quiet little town. "I could not stand the constant strain," he said to me, a year or two ago. The second one is also in a small western town. He lives quietly on a little farm near by. Said he, last year, to the writer, "My practice in the city of — amounted to about \$8,000 per annum. My income here is hardly \$1,000. I can live upon that, and on no account would I return to the city and work as I once did."

If we had time we could tell of lawyers and physicians who have talked in the same strain. We all need to sum up our privileges to know when we are well off.

## Editor's Specials.

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"Write the Vision and make it plain."

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PAT. MULROONY is quite sure that his is a blooded cow, but not certain whether short-horn or Jersey. He has borrowed a microscope to determine the question, and has promised to report through the *New England Journal of Bovinity*.

That's a — — — lie; but some try to have the truth made quite as ridiculous.

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### PRETTY STRONG.

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FROM page 246 of the August number of the *New England Journal*, we learn that its cider contains but three per cent. of water—stronger than the 1840 article, or was the *Journal* merely hitching on its "own fire-cracker?" A new figure in rhetoric, patented by the N. E. J.

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### APOLOGETIC.

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WE sincerely hope our contributors will have patience with us. Quite a number of contributions are on hand, and we would have been glad to have them before our readers. But for a month or two we have suffered from extreme nervous prostration, from which we are not likely to rally in time for the work on our September number, hence it is likely to fare as have the July and August numbers. Instead of doing as we would, we can only do as we must. Doubting our ability to do good proof-reading for a time, we use our own long prosy article, feeling that it will not be so serious if it is somewhat marred. Besides, it is much easier for us to proof-read our own composition. And further, the paper is joint-property with the Indiana State Dental Society, and its Secretary wishes either the original copy or proof at an early date.

But, dear readers, we have something better coming, for which you can afford to wait. In the meantime read carefully, over and over, the article of Doctor Strasburg, in the August number. The Dean of the Ohio College gave it to us a good while ago, but we could not make room for it sooner. She gives us the clearest discussion of her subject that we have read. We hope she will become a regular contributor to the JOURNAL.



## DOCTOR LILLY'S LECTURE.

OUR earliest acquaintance with the dental profession convinced us that its greatest scientific want was a more thorough acquaintance with chemistry. That is still the greatest want here, as well as in the medical profession. We publish Dr. L.'s lecture partly to show our readers what a nice science chemistry is when properly taught and studied. Then, as the doctor's father was our pupil, he is claimed as our professional grandson, and every one knows how foolishly partial grandfathers are. This would explain our selection of the article from a pile of copy, even if it lacked value. But as it is an almost perfect model of teaching, it is able to travel on its own merits. Reader, be sure you understand it, and you will hunger and thirst for more chemistry.

## PEDDLER'S TWADDLE.

WHEN very young we heard of hucksters crying their wares, and asked for an explanation. A party present said: "Let me tell you what I saw in a crowded fair when about your age: A woman would cry out, 'My husband mends shoes!' and a guttural voice across the street would respond, 'I'm the boy can do it.'" We are further enlightened by the *New England Journal*, pp. 258-9. (In the meantime, if you wish to do some cheap advertising, brag on your wares while pretending to discuss science, and possibly the reporter will not notice the digression, and put your huckstering harangue into the reading pages of his periodical. Business is business, you know.)

In the case referred to (see August number of the *New England Journal*, as above), the speaker comes out of a funereal cave to utter the following: "Dental Depot journals are quite good, but if we had to depend on them for our literature, it would not be quite so good. The only independent journals in this respect are the *New England Journal of Dentistry* and the *Independent Practitioner*. \* \* \* \* Every dentist ought to have at least one journal, and you have an excellent one right here at home; but if you wish to subscribe for the *Independent Practitioner*, I shall be glad to receive subscriptions."

"Comparisons are odious;" but will the reader compare the two "only independent journals," with as many issued from den-

tal depots—*Cosmos*, *Register*, OHIO JOURNAL, *American*, *Missouri*, etc.?

“Auld Esop lang ago related  
A tale of frag infatuated,  
Wha gat wi’ win’ an’ pride inflated,  
Sae meikle tight,  
She’d look as if an ox created,  
An’ burst outright.”

We hope the “independent journals” and their puffed-up eulogist will fare better.

But how does it happen that a journal outside of other business is so necessarily independent? Its prosperity depends solely on its subscription list. Its editors are therefore afraid to say what they wish, lest they offend subscribers. And even if, like the proprietors of the *I. P.*, they do not need the subscription money, they are ambitious to gain a large patronage. Their independence is like that of the boy who tells the dog he’s not afraid, while he climbs the fence all the same.

And does any one know better than the speaker referred to here, that one of the depot journals is *owned* by the editor? Why can’t he be independent? Does he not know, too, that in other cases the publishers claim and exercise no control whatever of the reading pages? Twice has it been our lot to edit depot journals, and we could not get even the *advice* of the publishers as to the insertion or rejection of an article. Have we not been independent? Could our position have been more so?

But we are wasting too much time on this. For a quarter of a century every journal that has started in a fence-corner, or anywhere outside of a dental depot, has boasted of its consequent independence, but has generally failed to show any other sign of it. The braggart is always the coward of the company.

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#### ERRATA FOR JULY NUMBER.

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UPON page 318, and 15th line from bottom, substitute their for the, and confirmed for infirm.

Page 319, and seventh line from top, substitute area for era.

Page 320, and 16th line from bottom, substitute presence for pressure.

Page 323, and 15th line from bottom, substitute convention for conversation.

Upon page 324, and the last word of the article, substitute best for least.

Dr. B.'s copy is mainly good, but has many indistinct words.—ED.

## Books and Pamphlets.

"I leave you here a little book."—JOHN RODGERS.

### QUIZ—COMPENDS.

QUESTIONS ON HUMAN ANATOMY. By SAMUEL O. S. POTTER, M. A. M. D. Author of "An Index of Comparative Therapeutics," etc., etc. With Sixty-three Illustrations. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut St.

A neat little volume of 138 pages, arranged in such a way, and so systematically and thoroughly, as to embrace about all that is known of human anatomy. It does not appear as if meant to supercede a regular text-book, but after the text-book has been once mastered, and the knowledge thus gained has begun to grow rusty, this little book is the very instrument to be used in polishing up and regaining a thorough mastery of the subject. The book is worth more than its cost to any who read it; and we can cheerfully recommend it to all who wish to become expert anatomists. Price \$1.00. For sale by the publishers and book sellers generally, or you can order through Ransom & Randolph.

THE PRACTITIONER'S READY REFERENCE BOOK.—By Richard J. Dunglison, A. M., M. D., etc. Third edition. Thoroughly revised and enlarged. Published by P. Blakiston, Son & Co., 1883. For sale by the publishers and Brown, Eager & Co., Toledo, O.

The demand for former editions of this work and the character of both author and publishers make it necessary to say but little in the way of recommending it. To praise the brightness of gold, or to eulogize the diamond would be absurd. Every practitioner whose memory is not absolutely perfect should have this book.

## Varieties.

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BY J. E. CRAVENS., D. D. S., INDIANAPOLIS, IND.

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### SUBLIME TOE NAIL MARKS.

*Ed. Varieties:—*

And the great National Dental Association,—the *American* Dental Association,—composed of delegates from reputable local societies and colleges, has met, left its noble foot prints on the sands of time, and retired for a year. What a pity that the sands must record the deep impression of the (toe) *nails* of the dignified Society! Why could the meeting not have passed with only the *usual* whisperings in corners, the *usual* scheming by the wily fellows, the *usual* grinding of axes and sweatings of the grinders, the *usual* secret pulling of the wires, and the uncertain, but willing and sudden jerkings up and bobbings down of the little jumping-jacks, at the ends of the wires? Why could not the impression left in the mud, no, sand, have been made as has become the custom, and only the *USUAL* and *well known* corns, made by the men who want to be made president, and those others, made by "opposers of measures on general principles," and the bunions made by the college question, or the educational regulators, have been displayed? We had all become *used* to these balconies, bay windows, &c., on the impressions, and were satisfied. Now when the sharp toe nails appear, we claim that the effect is not pleasant. When this Association, in a spirit of emulation of a Royal British Lion Association, and other noble scientific societies, and after due consideration, offer publicly, to the world, a prize of \$200 for an essay on a question that engages the pens of many

writers, and the pages of every periodical of the profession, we all feel that though the sum is small the principle is good, and the *honor* may be regarded by aspirants as worth, say \$165 more, making a sum total of say \$365, the same number of dollars that there are days in a year, less the change in small coin. We do not deal in £'s as do *Royal* Societies, but in \$'s, a much more Republican currency. A dollar a day is fair republican wages. Well, we offer the prize. Do all the ink-laden pens that have contributed to load down our mails with articles on the "Etiology of Dental Caries," enter the lists? Not a pen! Not a single pen in all this broad land! Not a pen that has ever felt the influence, or had *personal* acquaintance with the great Society—has been moved to write. Not a man who has pulled a wire, or ground an axe, or bobbed up when the great Dr. X. pulled the wire, makes a single original or personal experiment in the direction of Etiology, for the purpose of winning the \$200 in money and \$165 in honor. Why? Answer:—Too smart, knew they wouldn't get the \$200 in cash, and don't value the \$165 in honor. One man in all the dental world, who has spent too much time in his chemical laboratory in severe study and experiment, who has been too devoted to thorough microscopic observation to have time to pull wires and learn thimble-rigging tricks, and to observe small ways of great men in *American* National Scientific Societies, this one man alone is caught by the \$165 worth of honor, and the \$200 worth of testimony. He loves science for sci-



ence's sake, but being far away from home, and having that love for his brothers at home that homesick American dentists in Europe are so often troubled with, he thinks, "Ah! I will compete for *American Recognition*. I will work for an *American Honor*. I will send the results of my labors to my brothers at home. If I win the prize it will be sweeter to me than £'s or M's. If I do not win the prize, I can trust my brothers." The paper appears before the committee appointed by the great Society. The committee is composed of teachers of pathology, and men who fully understood the intentions of the *originator* of the prize, and of the society which offered it. After due and careful consideration on the part of these competent judges, the paper is judged worthy of the prize. By an almost unanimous vote, when the Society was in *full* force, (one dissenting voice) the report of the committee was accepted, the prize awarded, and the announcement of the fact made to the world by the public prints. The Society has done well and justly. The American dentist who is holding up the banner of American dentistry in Berlin, and among his comperes in Europe, and among the savants of the German Universities, has won the prize fairly, and all right feeling members of the profession are glad. Americans at home are satisfied and pleased that the Association have been able to justly pay so graceful a compliment to an American abroad. The American dentists of Europe are glad and pleased to know that one of their number has won the prize. It has been one of those peculiarly happy and appropriate and to be wished for things that are rare in the rough-and-tumble of life. It is harmony in a world out of tune. It is grace in the midst of awkwardness. It is a "fitness" that is soul satisfying. Hold!

The corner whisperer is at work. The wire pullers and grinders and bobbars have been too quick. They have given away for once to a noble feeling. "Twon't do! We have given a prize and published it, now we will take it away again."

"We have abided by the action of our committee, now we'll knock 'em out of time." "We have done what other scientific societies do in awarding a prize to merit, now we'll rap the knuckles of the successful candidate just as he is about to take the prize." "Ja! Ja! Ich bin selbst einer Deitscher, aber'r'r, we don't propose to let any American in Germany take our prize. We don't care for appearances." When the Society was about to adjourn the trap was sprung, and the few members present fell into it, and the prize was put back into the pocket of the Great National Dental Association, and the ugly toe nail mark is left. What a pity? C. M. W.

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#### AMERICAN ASSOCIATION NOTES.

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The American Dental Association adjourned at noon, Friday, 11th of August.

Niagara Falls is central, and always a place of sufficient interest to attract: consequently the attendance was large.

However, interest in the proceedings was noticeably lax. The Cincinnati meeting in '82 was better, although not so large.

The porcelain-crown fiend, with amalgam attachments, was on hand in all his usual terribleness.

The Association again stultified itself by refusing to elect Dr. Barrett, of Buffalo, to the presidency. It is strange that one of such acknowledged ability should be persistently defeated.

It is a sad day for the Association when the style of a coat receives honor that is beyond the reach of the higher intellects of the Association.

Saratoga is to be next honored by the Association.

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#### MORE ENGLISH ENTERPRISE.

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We called attention to a specimen of English enterprise in the August number of this JOURNAL. Here is another in a different line somewhat, clipped from the *British Journal of Dental Science*, for July:—

ALL COMMUNICATIONS STRICTLY CONFIDENTIAL AND PRIVATE.

A writer long accustomed to writing on and experienced in dental subjects will be pleased to revise, condense, or rearrange articles, papers, works, communications, &c., for any gentlemen who have not the "ready pen" for describing the results of their ingenuity, experiments or experience.

Much most valuable information is well known to be lost to the profession at large for want of the gift or acquirement of "ready writing."

Address, in first instance, to "Liber," care of Mr. —, Stationer, 16, — Street, London, W.

The above is certainly refreshing. Well written papers come high, but the fellows must have them. Grooming parties for examinations is bad enough, but now essayists are to be trained for their appearance before Dental Associations. What ever are we coming to?

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#### ITEM FOR THE NATIONAL BOARD OF EXAMINERS.

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The attention of our National Board of Examiners is respectfully called to the following scrap:—

"I'm sorter 'spicious 'bout book sense. Real old hoss sense is the kind

of sense to have, 'an ef the person's got the hoss sense he don't need the book larnin', an' ef he hain't got the hoss sense he can't take book larnin' to any great shakes." — *Arkansas Traveler*.

The language is not of the elegant pattern, so familiar to the highly educated and astute gentlemen of the Board of Dental Inquisitors, but the logic is singularly convincing.

The profoundly educated are very apt to sacrifice practical "hoss sense" through their admiration for "book larnin'". We would humbly suggest to the National Board the importance of keeping sight of "hoss sense" in the discharge of their imperial duties.

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#### HELPS US ALONG.

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The *Varieties* columns are open to the profession, whether subscribers of the JOURNAL or not.

We request short contributions, original, extracts, clippings, translations. Brief details of methods, operative or mechanical, experiments, tests, questions, criticisms. Thoughts on scientific subjects, education, ethics. New ideas and new things; old ideas that may have been forgotten. In fact send us anything of interest to the readers of the JOURNAL.

All intended for publication in *Varieties* should be sent to the editor,

J. E. CRAVENS,  
*Indianapolis, Ind.*

Send as early as the 10th of the month preceding, if possible.

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#### CONGRATULATORY.

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The *Odontographic Journal* is to be congratulated on its final escape from a sea of "Protoplasmic motion," that at one time threatened to prove boundless.

## THE MISSING DELEGATE.

Another test of the whirlpool rapids was made at Niagara Falls recently. A log buoyed up at one end and weighted at the other was set adrift at the Maid of the Mist landing. Its passage down the stream is said to have been similar to that of the famous little steamer. On entering the pool it kept well over to the Canadian shore, and passing slowly round the outer rim started promptly on its journey to Lake Ontario when the outlet was reached. It passed through the rapids in four minutes and the whirlpool in ten.—*Daily Paper*.

The above item may be of interest to those who attended the last meeting of the American Dental Association at the Falls. They can now account for the mysterious disappearance of the delegate who so frantically rushed from the International Hotel, when the sphynx behind the cashier's desk informed him that he had been charged \$4.00 per day straight, and that the agreed reduced rate of \$3.00 per day was ignored on some contemptibly thin quibble about neglecting to notify on registering, etc.

The facts appear to be that by the time he had *tipped* the waiters in order to get breakfast served in less than an hour and a half, had *lubricated* the elevator boy, *satisfied* the honor of the baggage-coon, and *paid* the porter for carrying out his grip sack that weighed three pounds and a quarter, the poor delegate's pockets were so utterly empty that it is no wonder he was light enough to shoot the rapids successfully. The whirlpool even had no power under him. We are glad the poor fellow got safely off. No doubt he is now

quietly resting at his home in Eastern New York

It was a desperate venture, but probably was his only means of escaping the balance of the Fiends of the Falls.

SCHAFF recommends iodoform in toothache on account of its gently caustic action as an anodyne application to exposed nerves. The circumstance that a single or repeated application of iodoform does not produce any irritation, much less any inflammation of the periosteum and the double function of the remedy as a cleansing and disinfecting agent, makes it especially appropriate as a caustic, particularly before the introduction of a temporary filling. The author uses a paste of the following composition:—

R Iodoform.....	60 grains.
Kaoln.....	60 “
Carbolic acid.....	8 “
Glycerine.....	9.5 “
Oil of peppermint..	10 “

Triturate the iodoform, kaoln, and oil of peppermint with enough glycerine to form a thick paste.

A WELL-INFORMED author estimates the number of teeth which are annually extracted in the United States at 20,000,000, and the number of artificial teeth used in the same period at 8,000,000.

In the German Empire there are 2,500 cities with a population varying from 5,000 to 50,000, without a dentist. This list does not include the cities with a population below 5,000, which, taken collectively, number 6,000,000 people; in these there are but seven dentists to do the work.

# OHIO STATE JOURNAL

—OR—  
DENTAL SCIENCE.

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VOL. III.

OCTOBER 1, 1883.

No. 10

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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### SHOULD THE OPERATIVE AND PROSTHETIC DEPARTMENTS OF DENTISTRY BE SEPARATED?

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BY E. J. WAYE, D. D. S., SANDUSKY, O.

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IN the discussion of this question several points are involved, the proper consideration of which must have due weight in arriving at a just conclusion. New ideas and advanced thought are rarely either understood or appreciated by the multitude. Old habits and customs long practiced, which have grown up with a community or a profession, are rarely willingly discarded for the new, and even though the new may be proven the better, the old will still have its earnest defenders, and whoever would advocate a change will be regarded as impertinent meddlers and innovators. That something of this feeling should be exhibited by dentists, when it is proposed to sunder the tie which for so long a time has held the two departments together, is but natural. There are doubtless conditions and circumstances which might render such a change an inconvenience, if not a positive disadvantage;



but if it can be shown that such a divorce would result in positive good for the whole profession, that the success and elevation of both departments would thereby be assured, then we submit, that merely individual and selfish interests should not be permitted to enter into its consideration. To show that there exists no real connection between the two departments, and that their practice in combination was, and is due to "blind circumstance," rather than affinity, let us glance backward some thirty or more years in the history of dentistry. At that time operative dentistry as now known did not exist; the two departments were then designated as "surgical" and "mechanical," and were defined by Harris (Dental Dictionary, edition of 1854,) the first as follows: "Dental Surgeon—One who devotes himself to the study and treatment of the *diseases* of the teeth and their connections." "Mechanical Dentistry—The art of constructing and applying artificial teeth, artificial palates, and appliances for the correction of irregularity in the arrangement of the natural teeth." At that period (1854) very little was known by a large majority of the men who then composed the profession in this country, regarding either the diseases of the teeth, or indeed of the organs themselves. The definition then given of the two departments, if conscientiously carried out, would have as effectually separated them then as it does now. The definition applied to the departments as they *should be* understood and practiced, rather than as they were or are, by the average dentist either of that period or this. There certainly exists but little more connection between the surgical and mechanical dentist than between the surgeon who amputates and treats the diseased or broken limb, and he who supplies the artificial limb. It was not any inseparable connection between the two departments which united them, but rather convenience, and the peculiar circumstances which attended the practice of dentistry at that period, which combined them. What is now known as operative dentistry, as has been said, did not exist, and the surgical department (so-called) was limited to a degree which reduced it to a merely mechanical calling. The surgical dentist filled and extracted teeth, but of their diseases, treatment, or even their anatomy, he was as profoundly ignorant as the many who undertake their treatment at this day. It was mechanical dentistry and the mechanical dentist who then took the lead. Artificial substitutes for the natural teeth, composed of porcelain, and

mounted upon a gold or silver base, were coming into general use, and the mechanical dentist of that day was the man whose services were most in demand. He was usually a mechanic, who had left, either from preference or profit, some kindred trade, not unfrequently a jeweler, a gunsmith, or other occupation, the practice of which had familiarized him with the use of mechanical tools, and who, possessing a taste for fine workmanship, either entered untaught upon the art of dentistry, trusting to his own ingenuity for success, or he submitted to an apprenticeship, of from two to three years, with some dentist of acknowledged skill, serving him faithfully in the laboratory, and paying for the instruction bestowed. Fully two years under careful instruction was considered not too long a time to master simply the details of the mechanical art. This must be followed by an experience of at least equal length, before he could put into successful practice the knowledge acquired, while the arrangements of the teeth, the study of a lifetime, had scarcely commenced.

At that period the manufacturer of artificial teeth had not assumed the role of Creator, and artificial teeth resembled, in one particular, at least, those of nature. They were made singly, and not in sections of two or three combined. Single teeth with an artificial gum, were, it is true, sometimes used, but it was found that though they served in a measure to restore the fullness lost by absorption following extraction, yet the difficulty of securing correct antagonism, nicely-fitting joints and even surfaces, and at the same time pay proper heed to expression, was so great that their use was confined in a great measure to those particular cases in which existed a necessity for restoration which could not be met by the use of single plain teeth.

No rules for the arrangement of teeth could be formulated. Nature was the only guide, and as her models are the highest and best we ever had or shall have, it would seem to be matter for regret that nature and not the manufacturer had not to this day furnished the models.

In the dental art, as well as in that of sculpture and painting, the careful study and imitation of nature tends to develope and intensify whatever of the artistic sense is latent in the student, and though every mechanical dentist did not rise to the position of an artist, he at least understood nature's method of arrangement, which is more than can be said of a very large proportion

of the so-called mechanical dentists of to-day, who accept without question or comment whatever the manufacturer pleases to present, so long as the labor of setting is not increased, and the process does not rise beyond the comprehension of the ordinary student or office boy.

The mechanical dentist of that period, though deficient in that knowledge which is considered an absolute essential in the practice of the real prosthetic artist of to-day (I mean an anatomical acquaintance with the muscles of the face and their connections, as well as the vocal organs) was, notwithstanding, more than an average man; a skillful mechanic with artistic taste, possessed of some degree of cultivation and intelligence, he was a fair prototype of the educated dentist of the present.

Surgical dentistry, though rejoicing in a high-sounding title, was in fact limited to a few simple operations, the filling of such teeth as had strong walls, without exposure of the pulp, and extraction. The emoluments of this operation were shared with the barber, though not the title, and it was the title rather than superior skill which elevated the one into a profession. This department was almost always united with and practiced by the mechanical dentist, a union which has existed up to the present time. It gave to the mechanical dentist an extra title, it required little additional skill, and it served to eke out an insufficient income, which last was perhaps the most potential reason. Their combined practice certainly did not tend to the elevation of either, but was simply a matter of convenience, and as both were purely mechanical, there seemed to be no reasonable objection to their practice in common. The work done by the surgical dentist was, as a rule, of not much advantage to the patient, and was not liberally remunerated. A filling that was guaranteed to remain in for a year was considered quite satisfactory (if it did it), and if it did not, there was the guarantee, and the dentist, if he could be found, usually replaced it without charge. Had the same conditions continued, does any intelligent dentist believe that the operative department would occupy the proud position it does to-day? And yet the same arguments are urged for this union to-day, though the conditions are entirely changed. The position of the two departments to-day is precisely the reverse of that described. Mechanical dentistry no longer holds its former prestige. It has fallen from the position of a high mechanic art, to become a mere



trade (the mechanical dentistry which is practiced throughout the country is meant, the results of which are met at every town, and whose synonym is disfigurement), and not the true prosthetic art, which is yet in a great measure an ideal. The operative department now leads and dominates the profession. In its ranks are to be found what formerly distinguished the other department, viz: brains, culture, skill and education. Its successful practice demand all these, and more. This is its present position—the causes which led to it are easily traced. The discovery that there exists in gold a cohesive property, which permits of its being welded, or united by pressure, without the aid of heat, was the event which gave to surgical dentistry its first impetus; it was the fulcrum by which this department was to be elevated from a trade to a profession. This discovery inaugurated a new method of filling teeth, and all the various instruments, appliances, and inventions, together with the potent influence of dental colleges and societies, dental literature and the diffusion of education and intelligence which grew out of it, combined, was the lever. The demands of an enlightened public stimulated the dentist to higher efforts and acquirements in skill and knowledge. He in turn required new appliances of every kind, thus stimulating invention, the result being a progress and advancement more rapid than the world has ever before witnessed; and to-day we behold that combination of medical knowledge and mechanical skill known as the department of operative dentistry.

The events just narrated, while accounting satisfactorily for the rapid progress seen in the one department, afford no adequate explanation for a retrogression as remarkable in the other. Not only has that department failed to maintain the proud position it once held, it has so far fallen from its high estate as to elicit from the profession expressions of commiseration and sorrow, and numerous have been the suggestions as to the best means to be employed to restore its lost prestige.

The fact of its decline is patent, the reason seems not so well understood. A knowledge of the causes which led to its present status, may assist us. Let us again indulge in retrospect. About the time of the discovery which was attended with result so important to the operative department, a new base for artificial teeth called vulcanite was introduced to the profession. It was followed soon after by the invention of section teeth (an improvement upon



nature for the benefit of manufacturers and poor mechanics.) By this invention two or three teeth were combined in one block or section, and being rigid and unchangeable, their use effectually prevented all exercise of taste and judgment on the part of the dentist, thereby reducing arrangement from a question of taste and skill on the part of the dentist, to a mere matter of close fitting joints, even surfaces and a true horseshoe circle, a boon to the artisan.

The result may be readily anticipated. The mechanical dentist, disgusted with a material the use of which dispensed with his hard-earned skill and experience, and reduced the preparation of a plate to a few mechanical operations so simple as to be within the capacity of the student or office boy, and section teeth which positively prevented all exercise of skill in arrangement, was not slow to perceive within the operative department, with its improved methods and requirements, a fitting field for his attainments.

Many entered it and achieved enviable reputations. These, if they practiced mechanical dentistry (properly so named when applied to rubber work and section teeth) at all, did so in the same spirit and with the same lofty motive as had in times past actuated them in the practice of surgical dentistry, viz: to fill up unoccupied time and add to their income. It may be stated as an axiom, that to lower the standard of requirements, either in a trade or profession, is to invite into such trade or profession an inferior class of men. The present instance is no exception. No sooner was the noble art of mechanical dentistry reduced to the status of a trade, its requirements consisting in the grinding of nice joints, joining the same evenly, and preserving the true horseshoe contour, than a horde of men whose limited abilities and education fitted them for the occupation, rushed into the profession, and by depressing the standard of remuneration to the skill required for its practice, soon succeeded in destroying all ambition save to do cheaper work than others, thus forcing such as possessed superior skill to exercise it in either the operative department or some kindred art; and yet we deplore the decline of the mechanic art, and wonder that the best dentists are ashamed to own that they practice it. Nor is this its worst feature; the two departments having been practiced in connection when there really existed something in common, since both were simply mechanical,

and when the successful practice of both was but the application of the same skill for a different object, (the difference being only in degree not in kind), to-day, when the operative department has grown into a specialty of medicine, together with mechanical skill, these rubber and section teeth men would assume to apply the small amount of mechanical skill they may possess to the practice of medicine, the treatment of disease. To deal with vitalized organs, nerve tissue and bone, though they may be as ignorant of their anatomy even, as most of them are of any true principles of art as applied to dentistry.

And this condition must continue and work injury to the profession and mankind, so long as ignorance and charlatanism are permitted so assume a knowledge of both departments without either the natural ability, or education, or skill, which are absolutely imperative to an intelligent understanding of either. A thorough mastery of prosthetic dentistry is sufficient to tax the noblest powers of any individual however gifted. The possibilities of this department are scarcely dreamed of by most of those who flatter themselves that the two departments combined make no demands to which their abilities cannot fully respond, and yet, a very large majority of these men never even saw such specimens of skill and beauty as are exhibited by the few who make the prosthetic art (as they should) a specialty. The studies for the two departments differ greatly. Prosthetic dentistry deals with mechanics and art; operative with mechanics and medicine. The first is required alike in both, and with this they diverge. "Artificial dentures have three uses: mastication, aids to speech, and artistic or natural appearance in the mouth. The first depends entirely upon a knowledge of the principles of mechanics and their correct application. That they may be so constructed as to aid speech and articulation, involves a knowledge of the anatomy and the action of the vocal organs. Their natural appearance in the mouth depends entirely upon principles of art which are entirely distinct from dental surgery." Operative dentistry, on the other hand, together with nice mechanical skill, also demands for the proper treatment of dental diseases, "a knowledge of medicine equal to that of the general practitioner; to which should be added such special knowledge as would make the dental surgeon an authority worthy to be taken into consultation with medical men, in all diseases either directly or remotely connected

with the teeth." This, together with such mechanical skill as would make him a skillful manipulator in operations upon the teeth and associate parts, is what constitutes the operative dentist of to-day. "To obtain such knowledge and acquire such skill, even to a reasonable degree, in the time now allotted by our dental colleges, and at the same time become skillful manipulators in the various kinds of mechanical dentistry, is simply impossible."

In every art and profession it is the standard set up which affords an intimation of what will be the attainments. Either department will afford ample scope for the exercise of the highest powers. Combine them and you lower the standard of excellence by just that amount of time, study, and thought, withdrawn from the one for the prosecution of the other, and to that extent fail to reach that high standard of excellence, which, were the entire powers of the mind concentrated upon either alone, might be attained.

The history of our profession in the past teaches: First, that the practice of the two departments in connection, was the result of convenience, rather than affinity, though both were then mechanical simply. It teaches that this union did not tend to the elevation of either, and also that had circumstances favored their separation, mechanical dentistry might not have occupied its present inferior position.

It teaches, second, that when united and practiced by one individual, that department which either through the force of circumstances or natural preference occupies largely his time and attention, is practiced to the neglect and disadvantage of the other, of which the present method and results will serve excellently as an illustration. It teaches, third, that to divide between the two departments, the requirements of which are in most respects entirely different, the skill and energy which might be fully employed in either by itself, is to detract from the one considered most important by the dentist, whatever of time and skill is bestowed upon the other, without improving or elevating either that department or the individual, the final conclusion reached being this:—

That until the operative and mechanical departments are divorced, and the studies which are required to fit students for the one or the other are clearly defined and taught in our colleges,

and such separation is adopted and practiced by the profession, no encouraging hope of a marked improvement in prosthetic dentistry may reasonably be expected.

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## PULPITIS.

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BY GEORGE H. WILSON, D. D. S., PAINESVILLE, O.

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[Read Before the Northern Ohio Dental Association.]

FROM *pulpa*, Latin, and *itis*, a Greek word meaning bold, rash; a suffix denoting inflammation of. We have a Latin root and a Greek suffix, hence a misnomer for Brother Atkinson to rectify. Perhaps it will be better to use the plain English till our nomenclature is properly constructed: Inflammation of the Dental Pulp.

It will be well first to study the two great subjects involved in this abnormal condition independent of each other: 1st, The dental pulp; 2nd, Inflammation; and this last subject we will again divide: 1st, Its general characteristics, and 2nd, as applied to the dental pulp. The dental pulp is described as being the fleshy mass in the central part of a tooth.

In Dr. Goddard's work on the teeth, published about 40 years ago, we have this description: "The pulp in a perfect tooth is the remains of a substance which once formed the matrix of the growing tooth. The matrix diminishes in size with the deposit of calcareous matter from its surface, till the proper size of the cavity is formed, which is just filled by the normal pulp. It is composed of granular matter, invested by an exceedingly delicate membrane or epithelium, and held together by a delicate cellular tissue. It has exquisite sensibility, and is highly vascular. The surface of the pulp keeps the ends of the tubuli of the ivory bathed in a transparent and alkaline halitus or serous fluid, which traverses the tubuli by capillary attraction, and keeps the tooth in a moist and living state."

Soon after 1870 we have this delicate membrane composed of elongated cells called odontoblastic membrane, the cells of which send out processes into the tubuli, to the odontoblasts of the deeper layers of the membrane, and throughout the whole pulp. We have the idea accepted that nonmedullated nerve fibers pass



out between the superficial cells and accompany the fingers of the odontoblasts into the tubuli. Heitzman in the June number of the *Cosmos*, 1882, says, "We can prove living matter proper and nerve tissue to be one and the same thing; and we can trace the ultimate fibrils of nerves to direct or indirect connection with the dental fibers." Dr. Bodecker, in the same number of the *Cosmos* says, "It is obvious from what I have seen, that the odontoblasts furnish the matrix for the basis-substance of the dentine, whereas the dentinal fibers being formation of living matter originate between the odontoblasts." The two references given affirm what was conceived but not proven 12 years before. Thus we may say the pulp is not merely the soft part of a tooth, with a smooth surface, nicely fitted about with a stone jacket; but it is a highly organized complex substance, permeating the whole dentine and enamel to a slight degree. It has arteries, or, in all cases, arterioles and capillaries, veins, medullated and non-medullated nerves of the sensory type.

Hence, it is capable of receiving impressions, being congested both active and passive, causing intense pain, and on account of its confined condition, easily strangulated.

Inflammation, from *in* and *flamma*, "within flame or fire," to "set on fire." That which constitutes the base of nearly all pathological conditions, characterized by redness, swelling, heat, and pain. Redness is largely due to the increased flow of blood in the arterioles and capillaries, causing such distention of them, that there appear to be large arteries where before there were none. New blood vessels are not formed until the plastic exudates begin to organize. Swelling is due to the increased amount of blood in the part producing a tortuous distention of the blood vessels, and extravasation of the leucocytes or white blood corpuscles, some red corpuscles, and lymph into the surrounding tissues. The distention of the vessels, termed congestion is described as either *active*, denoting an increased supply, or *passive*, denoting diminished power of circulation, or impeded return of blood. Heat—not only is the heat increased by the increased amount of blood in the part, but heat is generated, so that at the focus of the inflammation the temperature is higher than at the heart. Pais in an uncertain quantity, not at all proportionate to the diseased condition. It is mainly dependent upon the sensory nerve supply, and the nonability of the part to yield to pressure.

Paget gives four changed conditions from a natural to an inflamed tissue. 1st, change in the blood supply, both in the blood vessels and in the mode in which the blood passes through them. 2nd, a change in the constituent of the blood; 3rd, change in the influence of the nervous force; 4th, abnormal nutrition.

Inflammation as applied to the dental pulp: Here on account of the surrounding circumstances we cannot well observe the four diagnostic signs.

As the large majority of the cases of this disease that we will be called upon to treat, will be associated with deep seated decay of the dentine, we may observe the change of color by removing most, if not all of the debris, and the use of a reflector. With the more recent and active forms we will notice the change from the normal pink, or rose color, to the bright red, and as it passes on to the last stages, we will notice the deepening shades, so that in the passive stage it may almost reach a brown color.

Swelling, from its confined condition, must be slight, hence, where there is a powerful irritant applied, the active stage must soon pass into passive. As the blood supply must all come through the apical foramen, if the artery is enlarged for the admission of the increased amount of blood, it must follow that the space left for the exit of the venous blood will be diminished, and not equal to the increased demand made upon it. Hence, we see we will soon have the passive form from the impeded return of the venous blood; then will follow the engorgement and final strangulation of the whole pulp, similar to strangulated hernia in general surgical practice. Thus we will soon have death, and sloughing will next follow. The heat will be of no account to the practical dentist; but the pain will be more or less intense to the patient, according to the increase of the blood pressure, and the character of the irritant applied.

DIAGNOSIS.—We will first take into account the cause, which is irritation; either external (through deep seated decay generally), as variation of temperature, sugar, acids, salts, and under-pressure, from a touch to an exposed pulp to a blow upon a sound tooth. Internal, as pulp nodules, which we may question whether they are formed as the result of an inflammatory process, or non-nutrition. In the acute state, we will rarely have any difficulty in locating, as the patient will be very positive that it is that one. As it is usually associated with deep seated decay, we will often

find the debris very sensitive, but after we have removed the principal part of the broken down tissues with a few strokes of an excavator, we will be able to examine the pulp direct with the aid of a strong reflecting glass. We now have the cavity in the proper state to apply our treatment. As the acute stage lasts but for a short time, and the paroxysms of pain are of short duration, we rarely see the tooth till it has passed into a more chronic stage. The patient will tell us that the pain is caused by some one of the above named external excitants. The tooth will rarely respond to percussion, and when it does it is the result of concussion; except in the last stages, we may have periodontitis by contiguity. When we have not decay in connection with the inflammation of the pulp we arrive at our conclusion by differential diagnosis. Our next duty before we begin treatment is prognosis. We must decide the probable result of any course of treatment. There are three things we must be governed by: 1st, The stage of the disease; 2nd, temperament of the patient; and 3rd, general health at the time. In the work already referred to by Dr. Goddard we find this expression: "The usual duration of this painful affection is three days, when it terminates in suppuration or gangrene." It is not essential that an attack of this disease should be so severe as to cause such speedy death. It is nothing uncommon for patients to state that they have had twinges of pain at times for several months before they have been compelled to present themselves on account of an *active* inflammation of the pulp. As effect always follows cause, as pain is always the result of an irritant, so will inflammation follow as the result of an irritant sufficient to cause pain. The amount of irritation a pulp will stand without having its vitality seriously impaired will depend upon the general health of the patient, and the temperaments controlling the same. If the person is blessed with abundance of strong bilious or sanguine temperaments we may expect much from that source; but if the predominance be short-winded, nervous, or lazy lymphatic, then do not be too sanguine. Instead of death and suppuration we may have a fungus growth, which will either not cause pain, or be the source of neuralgic troubles. So in prognosis we necessarily decide, future life or death.

We must learn through practice, not theory, the recuperative powers of the dental pulp.

I believe that it is generally conceded by dentists that there

is no tissue of the body that requires such delicate manipulation, or is so prone to return to dust. If we have taken into account the climatic influences, the general health of the patient, age, sex, temperaments, and idiosyncrasies, if they are known to us we will be prepared to begin treatment.

By looking up the literature on the subject, we find that soon after Dr. Spooner taught the profession what a powerful ally we have in arsenious acid, the treatment of an exposed pulp was very much as many of us practice to-day. First, wipe out the cavity and insert a pledget of cotton saturated with creosote or some essential oil, and if the pain subsides, after a day or two, fill; or perhaps "the pulp may be partially destroyed or shrunk by tannic or gallic acids," then fill. If the pulp did not behave serenely under such treatment the dentist would turn taxidermist, apply arsenious acid paste, and after the pain had subsided fill. Truly could the dentist of that day claim to be a Specialist of Medicine, and demand all the rights and privileges of the general profession; for they not only used drugs, but they followed that nobler example of their leader: when they had killed their subject they buried him as soon as possible; thus removing an abomination from his eye, and a stench from his nostril. It was but natural that with the results that would follow such treatment the agent would soon become an exile, and that the other extreme of practice would be advocated—save everything. As a result we have many substances recommended for capping pulps; from the old gold and lead caps to the highest ideal suggested by Dr. Cravens of compelling the pulp to furnish its own protection by forming secondary dentine. There are but few of the methods of treatment worth our time to consider. In most cases it is deemed advisable to cap the pulp as soon as possible, and thereby exclude external irritants. There are many cases where such a course would be unwise. The pulp should always be as near the normal state as possible when sealed up. The medicines most commonly used are dilute carbolic acid, wood creosote, eucalyptus oil, oil of cloves, glycerine and tannin, bicarbonate of soda, tincture of iodine and tincture of aconite. Pepsin is a valuable agent to those who have faith in amputating, or saving a part after the rest has sloughed away; and in many cases is of value as a dressing prior to capping. Dr. Cravens' lactophosphate treatment probably has had its day; useful in the



hands of a few, with suitable climatic influences. Probably no one treatment is so extensively practiced for capping exposed pulps as the one advocated by Dr. King, of Pittsburg. Flow over the point of exposure a creamy paste of oxide of zinc and creosote, absorb the excess of moisture with spunk or bibulous paper, then cover with a paste of oxychloride of zinc. Any of the oxides may be used in the same way. Whatever course of treatment we pursue in regard to ultimate salvation of the organ, we must not expect to save every case that comes to us, for if we are not "wise as serpents" in diagnosing, we will find in time that we have many failures, unless our competitors discover the failures for us. Because the pain subsides and the case seems to be all right, we have not proof positive that we have been successful. Time alone will tell. If trouble does not arise in a few weeks, we will probably not have complications for two or three years, when the patient will return with periodontitis or alveolar abscess. Sometimes we have a sinus formed without being accompanied with pain.

**DESTRUCTION OF THE PULP.**—If we have decided that the pulp cannot be saved for future usefulness, we must destroy either by instrumentation or medication. The broach is probably the only instrument much used to-day. In medication, any caustic substance may be used. Probably the king of all, the one having the most devotees, is that old exile, arsenic. We will let the one agent suffice. It is recommended that an active inflammation shall be reduced before applying the arsenic. Some contend that the paste should never be left more than 24 hours; others would not hesitate to leave it a life time (as of old). It has been demonstrated that in devitalizing a pulp there is hardly a perceptible loss of the drug. The experiment has been performed of applying a tenth of a grain of arsenic to six successive pulps, devitalizing all with very little loss of material, perhaps no more than could be accounted for by handling it. Yet others claim there is absorption and it may be carried to distant parts of the system and do harm. One thing we may be sure of, if it is a caustic and destroys the tissues as it goes, the pulp cannot absorb any after the first layer is destroyed. Some contend that its powerful effect is by catalysis. Any one who is at all familiar with the use of the agent can hardly have failed to have noticed what a powerful irritant it is. To my mind this one characteristic

is sufficient to account for its whole effect. We might consider that the catalytic action. Many operators recommend leaving the destroyed tissue till it separates by suppuration before attempting to extract. Others extract at once. When a portion of a pulp is left in the root of a tooth, and we wish to remove it, it is better in my judgment to employ something that is not as dangerous. Chromic acid, or a strong tincture of iodine, will answer the purpose well. Great care should be exercised to confine the paste within the cavity of decay.

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### A CASE IN PRACTICE.

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BY DR. J. B. TULLIS, MARSHALL, TEXAS.

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ON the 17th day of July, 1883, Mr. — came to my office, stating that during the past night his teeth had bled a quart or more. We examined his mouth and found a large amount of deposit on his teeth, some of which were covered to the ends with salivary calculus. The gums were very much inflamed and were still exuding blood. We proceeded to remove most of the deposit about the teeth, the gums bleeding freely and profusely. We used the ordinary styptics to arrest the hemorrhage. We directed him to keep cool and quiet, and call on the following morning. Late in the afternoon the hemorrhage began again, and continued all night. At 7 o'clock A. M., I was sent for in haste to see Mr. —, who was "bleeding from the mouth," using the language of the messenger. He had in a vessel by his side near a half gallon of blood, and said, "Doctor, my head swims, and I feel faint." I removed him from the side of the bed to a rocking chair, and with ice water proceeded to cleanse his mouth of the clotted blood, and found the blood still flowing freely from the gums around all the teeth, and also from their margins, and from their entire surface above, from the bicusps on each side, from the edge of the gums to the lips. Ice water did not arrest the hemorrhage. I then applied Monsell's solution of persulphate of iron. It did no good; and after several applications, there was no abatement of the flow of blood. I then sent to a shoemaker, and obtained the inside of sole-leather, and after preparing it, I

then saturated it in pure carbolic acid, and with an instrument forced it in between all the teeth, and under the loose edges of the gums, which immediately stopped the hemorrhage at these places, but it increased it on the surface of the gums. I placed my fingers on the gums, and held them for a time, and removing them, the blood looked as if it came through hundreds of little orifices, and ran off the teeth freely. I now prepared a piece of the inside of the sole-leather as wide as the gums, and saturated it with carbolic acid, and placed it over the gums and another piece dry over it, and then folded a piece of linen cloth, and placed over both the pieces of leather, and then drew the lip over them, and thereby formed a compress. The hemorrhage ceased, and I placed the patient on the bed, with directions to keep quiet and cool, and ordered a hot foot bath given him. At 1 o'clock P. M., I saw the patient. He was quiet. I removed the compress to give some nourishment, and then replaced it again. He had some fever. Gave a dose of quinine. Saw him at night, still doing well, but feeble from loss of blood. Gave good nourishment, and directed if the hemorrhage set in again in the night, to let me know immediately. Next morning he was doing well. I dressed the gums, and continued the compress, as it had stopped the hemorrhage. After three days I removed the compress, but had to keep the packing between the teeth for several days. I then removed it, and healed the gums. Now for the cause of this: The subject, a German of large frame, a blacksmith by trade. Several years ago, he left the anvil and engaged in the saloon business; and as doctors should know the effect of their medicines, so saloonists often test the strength of their goods. My friend had been very liberal in his tests of the "spirits;" he tried them fully, and on two occasions came near crossing Jordan by aid of the "*spirits*." He was very much reduced in flesh and vigor. The hemorrhage from the gums was caused by dissipation. When I discharged him, I told him, he could eat mutton chops, roast beef, and drink milk and coffee, but if he wanted to stay with wife and children, he must not indulge any more. If you do you cannot expect to stand it long. He said, I know it, and will not take any more. I will sell to others, but not drink myself.

I have written the leading points in the case, and the treatment of the same in my hands, and the result, it being the only case just like it, I ever had in my practice. It may help some one

in a case of emergency, to save the life of some unfortunate son of Adam's race. I should be pleased to see the subject ventilated in the JOURNAL.

[In all cases like the above, constitutional treatment should be prompt and vigorous. New milk, fresh from the cow, or soups, with all grease skimmed off, should be frequently given in moderate quantities to keep up the strength, using alcoholic stimulants only when the pulse is too slow ; and internal styptics, as they are sometimes called, should be resorted to at once. About as good as any of these is the old opium and sugar of lead prescription. In this case one grain of opium combined with two of the acetate of lead might have been given, to be repeated in one, two or three hours, as demanded.—EDITOR.]

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### NECROSIS—A CASE IN PRACTICE.

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BY J. H. SAILOR, D. D. S., COVINGTON, INDIANA.

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IN the early part of November, '82, Miss X., aged about 25, of very delicate health, came to my office for treatment of the right superior lateral incisor. The tooth was dark colored (due to dead pulp), elongated, and very sore, while the surrounding gum was very much inflamed. On inquiry I found that the tooth had, as *she* expressed it, ulcerated, at intervals, for several years previously, the pus escaping, on former occasions, between the tooth and gums.

I diagnosed alveolar abscess, caused by putrescent pulp, and drilled into the pulp cavity, from the palatine surface of the tooth, to allow the escape of mephitic gas and pus. The tap-hole gave almost instant relief. As the tooth was quite sore I did nothing more at that sitting, but made an appointment for the next day. But, as is often the case, relief begat neglect, and I saw nothing more of the patient until the latter part of December, when, on examination, I found that great changes had been wrought in the interval of absence, and that now, instead of merely an abscess, we had *necrosis*, involving the loss of one tooth, and perhaps three. The right superior lateral, with its surrounding alveolus, was easily removed with the thumb and finger, nature having almost



completed the operation of throwing off the dead tooth and sequestrum. The adjoining cuspid was quite loose; a recession of the gum exposed nearly a third of its root, while the gum had a dark purple appearance. The adjoining central, like the cuspid, was quite loose, the gum very much inflamed, but with this difference, the gum had not receded to any great extent, while there was a dark purple line, of perhaps a half inch in length, and nearly an eighth of an inch in width, on the labial surface of the gum, between the centrals, running parallel with the roots of the teeth. About midway of this dark line was a small healthy break, and to *this*, in all probability, is due the salvation of the right central. On the opposite side of the mouth, at the left superior first bicuspid, there was a recession of the gum similar to that of the cuspid described, with the same purple line to the gum, while the gums generally had a congested, angry appearance. A small portion of bone had exfoliated from around this tooth, and was removed by the patient previous to my seeing her in December.

The treatment consisted in thoroughly washing out the diseased parts with "Phenol Sodique" (diluted with tepid water); a mouth-wash of the same was given to be used several times a day, while the cavity, from which the sequestrum was removed, was filled with crystals of boracic acid. This treatment was continued for about six weeks, seeing the patient every day for the first two weeks, the third week three times, and from that on twice a week. At about the end of the first week, the gums began to assume a more healthy appearance, and from that on a decided improvement was manifest. In about two months from the time that the tooth and sequestrum were removed, the gums were in a healthy condition, and an artificial tooth was inserted. During the treatment and up to the time of inserting the artificial tooth, the *space* between the central and cuspid was filled with white wax, which was worn constantly, but could be removed and replaced at the pleasure of the patient. This had several advantages, (1) it kept the crystals of boracic acid within the cavity; (2) it served as a support to the adjoining teeth; (3) it held the space for the easy insertion of a tooth afterward.

I would say in addition, that the "Phenol Sodique" mouth-wash was used up to the time of the insertion of the artificial tooth. Also that gum disturbance was shown in the lower jaw, but in a less degree than in the upper.

The patient at present writing, although in poor health, has had no recurrence of the trouble ; and the adjoining cuspid and central, previously referred to, as well as the bicuspid on the opposite side, are as firm as could be expected under the circumstances.

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## PAINLESS EXCAVATING—OPINIONS.

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BY JOHN FELIX BOYD, M. D.

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THE principles for the guidance of the operator in excavating cavities of the teeth are as follows: 1st. *Accessibility*—to open or expose the cavity, so that its contents and uttermost parts may be reached directly with any necessary instrument. 2d. As soon as the cavity has been opened to free access and examination, the final dimensions and form of cavity should be estimated ; and all further cutting away of inner walls and margins should be to the estimated end. 3d. After the removal of all debris, and dead tooth substance, the last object of the operator should be, the proper shaping of the cavity for the reception and retention of a filling.

### PRECAUTIONARY.

When the cavity, as presented first, is open sufficiently to admit of it, a small pellet of cotton should be inserted and a quantity of soft oily matter removed by displacement. This may be accomplished usually without pain, by avoiding unnecessary violence, and using a small instrument that will rotate freely within the cavity. After displacing the oily matter, take a fresh pellet of cotton, rolled compactly, and large enough to fill the cavity, dip this in creosote, oil of cloves, or any other preparation desirable, dry off on a napkin all that will flow from the cotton, and press the pellet into the cavity, packing down the margins.

The contents of a cavity are apt to be mal-odorous, and it is to correct this unpleasant feature that creosote and oil of cloves are suggested. However, these should never be present in the slightest excess, as they have no beneficial effect on tooth substance, and probably are more or less injurious, therefore the advice is given to thoroughly dry the cotton against a napkin before inserting the pellet into the cavity. The object of inserting a compact pellet

of cotton, before excavating, is two-fold: that the fibrous mass may act as a shield, or foil, to protect the deeper and critical part of the cavity wall from being suddenly and violently wounded by vicious plunges of the excavator, so liable to occur in chipping down the frail edges of marginal enamel, particularly if too much force is used. Secondly, after the margins are trimmed, the pieces of enamel and dentine that otherwise would have dropped or been pushed into the cavity, will be caught and entangled by the fibres of cotton, and when the pellet is removed will come away with it. Thus may often be avoided much unnecessary and unpleasant scraping of sensitive dentine walls, to remove chippings made in excavating.

A second precautionary measure, quite as important as the cotton pellet shield, is a proper selection of excavating instruments. It should be borne in mind always, that, when cutting at a given part of a cavity, no other part of it should be touched with the instrument. The bed, or deeper part of a cavity, should not be touched with the same excavator used in cutting away the marginal enamel. The deeper part of a cavity wall (the bed) usually is that part nearest the pulp, and often, in deep cavities, affords but a slight, yet the only protection to the pulp.

For chipping down marginal enamel, in nearly all cases, the simpler forms of excavators—known as axes and hoes—are preferable. In selecting an instrument for this purpose observe the following points: when the neck or shank of the instrument is resting across the marginal enamel (the blade being in the cavity), the blade should be so short that it will not touch the bed or deeper part of the cavity while in that position. This rule applies equally to axes and hoes. A chisel often employed for this purpose, indeed designed for it specially, has a shoulder from 2-16 to 3-16 of an inch from the cutting edge, making the true blade of the chisel the same length. The shoulder of this instrument is made to strike against the solid marginal enamel, and if the blade is short enough prevents wounding the deeper parts. The length of the blade must guide in the selection of the chisel, as well as in selecting the common axe or hoe form.

When the margins are properly trimmed, that part of the operation should cease. Next in order, probably, will come the removal of the cavity lining of tooth substance that is either dead, or so nearly so as to be undesirable to be left remaining. This

lining is often of a flexible, leathery character, and at a little distance under the surface is excessively sensitive—far more so than healthy dentine. By proper manipulation this leathery material can be removed with very little pain; while, by improper manipulation, the removal of it is apt to be attended by pain of excruciating character. Not only is great pain to be apprehended, but a careless or rash cut with the instrument, at any time during this part of the operation, is liable to expose or injure the pulp of the tooth. It is the writer's opinion that 90 per cent. of pulp exposures are unnecessarily made by the careless handling of excavators.

Final instructions as to the proper manner of removal of the leathery lining of the cavity of decay are as follows: Begin at one side, near the opening or orifice of the cavity; insert the instrument a little distance and press away from the wall toward the centre of the cavity. The object is to cause the flexible mass to peel off, if possible. This can usually be done, and if carefully followed up, the entire lining of the cavity may thus be removed, the pain being but slight, if pressure against the wall of the cavity is avoided. As fast as the leathery or flexible mass is detached, the pain at the point of separation ceases, so that, when the entire removal of it has been accomplished, the condition of the surrounding dentine will be greatly improved, as to sensibility. In the use of any dragging instrument in a cavity in a living tooth, the pain can always be much modified, and sometimes avoided, by beginning near the center of the bed of the cavity, and drawing the instrument toward the side or margin. The philosophy of this is, that those tubules nearest the pulp are first severed, and of course, in those sensation is effectually stopped, so far as concerns their more remote external portions. Collateral relations, such as anastomosis, and loops, are sufficient to maintain a sort of half life in a section of dentine otherwise sequestered; but collateral relations are not such as to communicate the sense of pain, unaided by direct tubular connection.

The final injunctions are that excavators should be as sharp as possible, and always kept so, as dull edges increase pain. Never cut twice where one cut can be made to answer, because two always hurt worse than one, and a strong effective cut hurts no more than an indecisive, weaker one. Aimless and unnecessary cuts are never beneficial, but are often harmful. Be positive and brief in excavating, and stop when done.



## SHADOWS.

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BY G. G. HOLLISTER, D. D. S.

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How quickly things may change about from what they seemed to be !  
And how this wondrous change is wrought is more than we can see.  
Time shifts the scenes of life about in a surprising way ;  
And looking back upon the past, a year seems but a day.  
To-day, we're boys, to-morrow, men, with cares-of life before us,  
And each must watch with careful eye, lest waves run roughly o'er us.  
For 'tis the busy race of life that is most often won,  
By those found ever wide awake, and ready for the run.

How often in the course of life, or in a race for fame,  
Dame Fortune seems to favor most some individual's name ;  
Taking delight in heaping up a cup that's running o'er,  
With all the blessings of this life, an hundred fold or more.  
But what is in a name ? we ask. Nothing, yet something still ;  
For deeds done by an ancestor, may oft with honor fill ;  
And influence a world to look, with favor as they can,  
Not merely on the name alone, but partly on the man.

Yet what more does a name imply, to either stand or fall ?  
The world looks at a man's own acts, and sternly judges all.  
Our battles we must fight alone, and not depend for aid  
Upon a world that labored ere its own success was made.  
Then, as the world is large enough for every living man,  
Take hold of opportunities and use them as you can ;  
Stand not and think of past events, oblivious of to-day,—  
Another hand may pluck the rose which now is in your way.

Dentists do not often run successfully into poetry, but if the above helps some young dentist, a little in love and somewhat discouraged, to hold on and prosper, it will pay for its space.—ED.

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ON THE PHYSIOLOGICAL ACTION OF NITROUS OXIDE.

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BY W. EDWIN GROUND, M. D.,

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[Lecturer on Oral Surgery and Diseases of the Eye and Ear in the Toledo Medical College, Toledo, O.]

THE importance which nitrous oxide has lately assumed as an anesthetic, renders the discussion of its action on the human system of prime importance.

It is being used, at the present time, very extensively for the

painless removal of teeth, in not only every city, but almost every village in the State, not only by the qualified man, but by (I am sorry to say) the mediocre, the effects of which on his patient is chaos in his mind. About the beginning of the present century, Davy, while serving as chemist in the Pneumatic Institute of Dr. Beddoes, experienced the pleasureable and exhilarating effects of the gas, but did not make known its anesthetic virtues. The latter were reserved for Horace Wells, a Hartford dentist, who, in 1844, discovered that it was an agent capable of obtunding pain. His interest in the subject was excited by witnessing persons intoxicate themselves with it, and show no signs of pain when they received severe falls and injuries. In order to test the matter he inhaled the gas and allowed a tooth to be painlessly removed from his mouth. So sanguine was he of success in his new undertaking that he sought to exhibit his painless dentistry to the Harvard Medical Class. Consequently, a patient was procured and a position taken in the arena, and the gas administered, and when it was supposed the patient was under its influence the tooth was removed, but alas for science, the patient roared with pain and the amphitheatre echoed with hisses!

About this time the virtues of sulphuric ether as a pain destroyer were being extolled. So great was the interest that Wells's discoveries were almost forgotten.

About 1868, Colton of New York, and Thomas of Philadelphia, popularized its use by putting it to proper and scientific tests, until now it is acknowledged to be the most safe anesthetic used.

Much has been written and said concerning the physiological action of nitrous oxide. Blood acted upon by the gas out of the body assumes a dark color; but its effects upon the corpuscles, if it have any, are not made manifest. That nitrous oxide will not support life, either vegetable or animal, is proven by the experiment of Joylet and Blanche. \*They placed frogs and rabbits in receivers containing an atmosphere of nitrous oxide. The former lived two hours, the latter two and a half minutes. A sparrow died in half a minute. Plants ceased to grow under similar circumstances. Inspiration of the gas proved fatal to a guinea pig in

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\*—— But Watt and Wood's experiments prove that it will support respiration, while those referred to here simply show that both animals and plants may be suffocated in their own excrements —ED. JOURNAL.

two and a half minutes. If the gas be given with an admixture of oxygen, anesthesia is postponed; and if the per cent. of oxygen is increased sufficiently, no anesthesia is produced, death following by dyspnoea. As the per cent. of nitrous oxide increases the oxygen diminishes.

Lyman gives the following experiment on dogs, and shows the gaseous composition of the blood:—

“After breathing 100 c. c. of pure air the arterial blood yielded—

Carbonic acid gas.....	48.8	per cent.
Oxygen .....	21.0	“ “
Nitrogen.....	2.0	“ “

At complete anesthesia the arterial blood contained—

Carbonic acid gas.....	34.00	per cent.
Oxygen .....	.05	“ “
Nitrous oxide .....	37.00	“ “

M. Paul Bert showed by his experiments that when the oxygen falls two or three per cent. the animal begins to exhibit signs of anesthesia. Therefore it has been a very plausible supposition to many that its effects are due to the exclusion of oxygen rather than any specific anæsthetic properties of its own, the gas assuming a negative or passive position only.

That nitrous oxide has positive anæsthetic properties is demonstrated by the fact that, if a person inhale a mixture of air and nitrous oxide a sensation of exhilaration will be experienced. The functions of all organs are increased in action; the most noticeable, however, are those of the special senses. All ordinary sounds become intensified and seem almost deafening. Bright lights flash before the patient's eyes and a general sensation of warmth and lightness is experienced. The muscular movements are irregular and excessive. Tactile sensibility is abolished and insensibility to pain obtains. During this time the patient laughs and shouts hysterically, but does not lose consciousness completely. The pulse is slightly accelerated, the eyes injected, and the pupils dilated.

When the undiluted gas is inspired, the stage of exhilaration and excitement is very brief—in fact almost imperceptible, the patient passing into a condition of profound anesthesia and insensibility. The pulse is rapid and feeble, the countenance livid,

and cyanosis and profound asphyxia follow, and death finally ends the scene. Upon the withdrawal of the gas the asphyxia promptly disappears. Sometimes a sensation of giddiness and headache ensues after the administration.

The time occupied in producing anesthesia is generally fifty or sixty seconds. When the gas becomes sufficiently diluted in the blood after the removal of the inhaler, then we have a manifestation of those exaggerated phenomena which occur when the gas is given with an admixture of air or oxygen.

Nitrous oxide, unlike chloroform or ether, does not enter into any chemical combination with the blood, but exists therein as a simple solution or mixture. For this reason the successive stages quickly follow each other, and to this is due its comparative safety.

We have then in a person under the influence of nitrous oxide, a condition of anesthesia plus asphyxia; therefore, in case of unpleasant symptoms arising, the immediate removal of the inhaler will thwart them, thus rendering the operator master of the situation.

How long the tissues may remain saturated with the gas without producing death is a question I will have to leave for future determination. In the lower animals it is certainly very brief.

Improper methods of inhalation may cause muscular rigidity, excessive movements, irregular respiration and action of the heart, cyanosis, etc. Muscular rigidity and excitement are due to the admission of air.

When anesthesia is desired it is absolutely necessary to give it undiluted, and unless alarming phenomena occur, the inhaler should not be removed until the desired effect is secured. The author desires to call attention to the fact that extreme caution is to be exercised in all cases. Nitrous oxide should never be given to persons known to be suffering from organic lesions of the pulmonary or cardiac organs, particularly the former. I have known persons to be weeks in recovering from the effects of a dose of this gas, while some persons never recover perfectly from the shock their system has sustained. While the deaths attributable directly to the gas are comparatively few, yet I am inclined to think that much impairment to health has resulted.

Therefore it behooves every one who has the welfare of his



fellow being at heart to thoroughly acquaint himself, not only with the action of the drug, but also with those conditions of our mortal bodies which contraindicate its administration.

If I have succeeded in exciting a deeper interest in this subject, such as will lead to a more careful study of it, in a single mind, the mission of this paper will have been served.

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## PHOSPHATE OF ZINC.

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BY GUSTAVUS NORTH, D. D. S., SPRINGVILLE, IOWA.

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PHOSPHATE of zinc is a very useful material, especially in filling deciduous teeth or large frail cavities, and as a nonconductor in capping exposed pulps or sensitive dentine.

The object in writing this short article is to throw some light on a chemical change of the material: In many cases we find the liquid crystallized and unfit for use; and some have condemned the material on account of this trouble. When the liquid has crystallized, add a little warm water, and if it fails to dissolve the crystals, set the bottle containing the material in a cup of water and let it gradually heat, and the crystallized material will readily dissolve. Then pour it into a test-tube and boil until the water evaporates, and it is again ready for use.

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## Correspondence.

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"I charge you that this epistle be read"

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*Editor of Ohio State Journal of Dental Science:*

DR. GEORGE WATT:—

I READ Dr. H. R. McClellan's article with some care; and while his marked modesty struck me, I was somewhat surprised to see that he utterly ignored the work of the late Dr. Anstie on the subject of "Stimulants and Narcotics." I would recommend it to the careful consideration of all who are interested in this subject.

Those who are interested in the matter of "doses" will there find an explanation of the opposite effects of the same drug when given in the "food-stimulant" or the "narcotic" dose.

Those who are interested in what might be called the "family relationship" of drugs will be pleased to follow the author as he traces the similarity of the action of opium, alcohol, ether, chloroform, Indian hemp, tobacco, theine, caffeine, etc., all of which are *shown* to have a "food-stimulant" as well as a "narcotic" action. Even common salt is shown to have its fatal or narcotic dose.

I say *shown*, not *prove*! Gravitation can be *shown* but not *proved* to Bro. Jasper, who says "de sun do move round dis yarth, 'cordin to de Scriptures."

This question, as far as it pertains to the action of ether and chloroform, is of grave practical importance to all operators who, like myself, are daily using these drugs or their equivalents in their own practice and general surgery.

Who has not heard the exclamation, when he had given "a *little* just to deaden the pain," "Oh, doctor, I never suffered such agony in all my life. What made it hurt so?"

What, indeed, but that your anæsthetic was no anæsthetic, but merely a nerve excitant? There must be some logical explanation of this familiar experience which is so humiliating to the operator and so painful to the patient.

I have neither time nor disposition, my dear doctor, to argue with any man on his favorite hobby. But I would mildly suggest that if you should ever succeed in banishing all the "erroneously" called "stimulants and narcotics" to the bottomless pit, you will have so added to the attractions of the place as to paralyze the efforts of our revivalists. Will not the ungodly (he who voted against the Scott law) place his sinful thumb to his nose and say go to—heaven, with your water clear as crystal and golden streets, etc., but I will go where the Thistle Dew is found."

Ah, doctor, "Tell it not in Gath, publish it not in the streets of Askelon," which I would freely render, "Don't mention it in Kentucky."

Did you not err in quoting Solomon, concerning apples and pictures when so very "appropriately" to the subject he said, or, indeed, commanded, "Give strong drink to him that is ready to

perish and wine to him that is of heavy heart."—Prov. xxxi.6\* But, perhaps, like Burns, and myself, and—some others, you "are a keeper of the law in some sma' points, but not in a'."

As Solomon and Burns are often quoted in your JOURNAL OF DENTAL SCIENCE, allow me to quote from memory: —

Leeze me on drink! it gars us mair  
Than either school or college;  
And night or day it never fails  
To kettle up our knowledge.

He refers to the stimulant dose, but unfortunately did not confine himself to it. F.

BEDFORD, IND., August 11th, 1883.

*Editor Ohio State Journal of Dental Science:—*

In your JOURNAL for August, Dr. J. Hooper says, referring to children's teeth: "If extracted before the proper time there is great danger of rupturing the permanent teeth." If there is great danger of rupturing the permanent teeth, then they must occasionally suffer that misfortune, as the temporary teeth are extracted at almost all stages of the formation of the permanent ones. I have yet to see the first case of such rupture, that is if it makes any difference with the permanent teeth to be ruptured. I do not know any one who has seen such a case. Who has?

The rest of Dr. H.'s paragraph is as follows: "Interfering with mastication, and causing constriction of the arch, producing deformity." If he can prove that constriction of the arch results, I hope he will do so, as it is a thing often asserted, but so far lacking a single practical illustration in my experience and observation.

Much of what we read in medical and dental text books, describe, with such voluminous particularity, every phase of given subjects that we are amazed that any writer can *know* the tenth part of what he asserts. And as we see the views expressed in

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\*——It was not Solomon, but the mother of King Lemuel who advised to "Give strong drink unto him that is ready to perish, and wine (literally translated vine fruit—grapes) unto those that be of heavy hearts." Or, in other words, drug the culprit that is about to be executed, and prescribe a diet of grapes to the melancholy dyspeptic. It was common at much later dates to carry out both these prescriptions. The mother had just told her son that "It is not for kings to drink wine," and she gave as a reason that it tended to make him "forget the law and pervert the judgment." The king's physiology is the same as the citizen's; and it is not a good thing for either to forget the law, and the drink that causes him to do so is a bad drink.

But our special aim now is to do justice to the woman,—wiser than Solomon for aught that we know.—[ED. JOURNAL.]

very much the same language in the oldest and newest works placed before us, the belief amounts to a demonstration that much is repeated without very serious thought as to its probable consistency with actual facts. And since so many reiterate old and exploded fancies with all the solemnity of latter-day revelation, it seems that one can do nearly as much good in his day and generation by assisting at such explosions as in giving his time exclusively to elucidating new theories.

Respectfully,

W. E. DRISCOLL.

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TROY, O., July 16, 1883.

DEAR DOCTOR:—Seeing comments in the JOURNAL on giving additional flexibility to the cable of a dental engine, I wish to state my experience.

I had one of the original Morrison's and the manufacturers were compelled to remodel it, on account of it infringing a sheep shearer which was sold to White presumably to shut off their only competitor at that time in engines.

I had my Morrison remodeled, but found it quite annoying on account of the driving cord coming in contact with the frame of the shaft pulley, when turned a little too much, and binding so much as to make treading difficult.

This I overcame by making the frame rigid instead of pivoted, putting a three inch shaft into the pulley and attaching the original shaft with half a driving spring. This, with half a spring next to the hand-piece, gives me all the flexibility desired, and the tremor gets lost between the two springs. I have used it this way since 1875, and desire nothing until I can afford an electric motor, and be free of a treadle altogether.

I wrote Johnston Brothers, giving a full description, but they soon brought out the Johnston engine, and of course my plans were laid aside. There are certainly some of the remodeled Morrison's in use, and this, of course, is intended for the benefit of the owners.

Very truly yours,

A. J. GROSVENOR.



## NOTES FROM EUROPE.

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*Editor Ohio State Journal of Dental Science:*

I HAVE just returned from Cologne, where I enjoyed a three days meeting of the American Dental Society of Europe. There was a better attendance of members than usual, and a large attendance of visitors; and the meeting was unusually interesting and profitable. We had a splendid paper from Doctor Miller, of Berlin, giving the result of his elaborate and scientific experiments in his sincere efforts to find the true cause of caries of the teeth. I am sure when you see it in print you will think with me that we have in our little Society one man, at least, that gives honor to any society of honest, scientific workers. I am also happy to say he is an Ohio man; and we are indebted to the father of American Dentistry in Europe, Dr. Abbott, of Berlin, for such a shining light in our profession, from the fact that he was blessed with a nice daughter, and that daughter brought him a nice son-in-law, who, from his studies in the scientific schools of Berlin, saw a grand opening in dental science for research and investigation. Other papers were read of more or less interest, on the leading subjects of the day. I tell you there is a growing interest manifested by the American dentists in Europe in this little Society; that members and visitors come from all parts of Europe to attend its meetings, sparing both time and money in an effort to be present to partake of and contribute to the discussions of questions of the day which interest us all so much. It stands us in hand, in these days of "new departures," to watch well that our chosen profession is not impaired by false teaching. The tendency of many of those who take upon themselves to teach us through the journals is to cut from under us the foundation on which we have built our faith in the past, and send us adrift to fly through the air like meteors, with no permanent resting place. To be a teacher in any department in life involves great responsibility. To teach the rising generation of dentists is as important as any other department of instruction, and even more important than many of these departments. To every conscientious dentist the battle with caries

of the teeth is a serious one, and as the tendency seems to be that its ravages are rather on the increase than diminishing, it is a serious question to face in knowing, first, what is the cause of the destruction, and what is the best remedy to prevent the destruction of the teeth of the present and future generations. To say that our profession has failed in its mission in the past, would be going contrary to all history and to the experience of all of us. To the skill and research of dentists the world is indebted for the comfort, happiness, beauty and long life of millions of its inhabitants. As one of the great contributors to the happiness of the world, we are appreciated by the intelligent portion as well, if not better than other professions. As we have succeeded so well in the past, let us hold on to that which is good, ever striving for that which is better. To say, in this day of enlightened dentistry, that "gold is a temporary stopping," as one writer has just said! We all know that gold has saved teeth better than any other material yet discovered, for I, myself, have seen fillings with gold that have saved the teeth for nearly sixty years. A dentist that conscientiously fills teeth with gold, with the effort to save the teeth, and give the most comfort to his patient, may have some failures from causes not under his control—bad tooth structure, in which no filling yet discovered would preserve the tooth, or from the most frequent cause of failures of any material, the want of cleanliness upon the part of the patient. Those of us who have the opportunity of seeing gold fillings which have been made carefully, and for patients who appreciated the effort which had been made to save their teeth, and who had done their part by care and cleanliness, are satisfied that no other material yet discovered will compare, in any degree with gold, as a preservative material in saving decayed teeth. All the mastic filling material yet discovered, I have found is a delusion and a snare. As for amalgam, there is no doubt but it does save thousands of teeth, and it would be hard for the profession to get on without it. But then nicotine has been found to stop the decay in a tooth of old smokers; but who would want such unsightly stuff in the mouth?

W.

## Societies.

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"Wherewith one may edify another."

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### AMERICAN DENTAL ASSOCIATION.

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TWENTY-THIRD ANNUAL MEETING.

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NIAGARA FALLS, August 7th, 1883.

#### FIRST DAY.

THE American Dental Association was called to order at 11:30 by Acting President, Dr. G. J. Friedrichs, of New Orleans, La. The meeting was held in the spacious parlors of the International Hotel. A picture of the late lamented President, Dr. W. H. Goddard, of Louisville, Ky., hung behind the President's chair, draped in mourning, the chair being also covered with crape. Doctor Friedrichs announced as the first order of business the calling of the roll of qualified members who had paid their dues. He then stated that he had learned since his arrival of the death of Dr. William H. Allen, of New York. He proceeded to address the Association in the following words:—

#### THE ACTING PRESIDENT'S ADDRESS.

#### *Members of the American Dental Association:*

GENTLEMEN:—By divine permission we are here convened to confer upon the high interests of our profession; but the pleasure which I experience in again beholding so many familiar faces is mingled with emotions of sorrow, that from our midst are forever removed two of our best known and most valued members. Dr. Marshall H. Webb and our late president, Dr. William H. Goddard, since our last reunion have both embarked upon the vast and mysterious ocean of eternity. As the successor of one, as the friend of both, and in my official capacity I feel it my first duty to voice the sentiment of all assembled here, and twine one single flower in the great wreaths of respect, of love

and regret already woven in their honor by the profession at large and by all men by whom eminent attainments, modesty and true worth are revered and glorified. Dr. Marshall H. Webb, prominent in his profession, stricken in the prime of life and in the ripeness of his intellectual powers. Vain were it here to name his many virtues or linger amid the details of a career, short, but brilliant, and so well known to us all. Indeed, I feel my humble abilities inadequate to accord the meed of justice his memory deserves, though my heart proclaims his worth and our great loss in a language more deep and more eloquent than words. His busy mind and willing hands are now stilled in "death's cold embrace; the sunshine of his marked personality and his genial ways, to those who knew him, is forever extinguished; no longer will the accents of his voice, ever freighted with wisdom and goodly advice, be heard at our council board;" and as we instinctively turn to greet the once familiar form, absence only too pathetically and too truly reminds us, that indeed of him there are

"Deposited upon the silent shore  
Of memory, images and precious thoughts  
That shall not die and cannot be destroyed."

Our late President, the honored and lamented William H. Goddard, like a noble tree which has withstood the blast of many winters, at last has succumbed to the sturdy and relentless strokes of time and now lies prone with all its glorious fruits full upon it. What happiness, what consolation, must fill our breasts upon the reflection that this Association, while it honored him with the highest distinction within its bestowal, and to which his faithful services for so many years as its treasurer so justly entitled him, it at the same time conferred upon him a boon which may be honorably craved by any member, and for the enjoyment of which he felt with a prophetic impulse that this would be his last opportunity. Our science has suffered a great loss, indeed. True, brighter names may adorn her page, achievements greater than his may shed more lustre upon her; but dentistry ne'er nurtured a son more true to her principles, more zealous for her advancement, more regardful of her integrity, more worthy of her traditions, or more deserving of her honors. Gentlemen, membership in your Association was a voluntary act on my part. To cast my feeble abilities with the standard-bearers of our



specialty was a duty I felt I owed to the profession of my choice. Imbued with these sentiments I can scarcely realize, although ambition is laudable, that I should so soon be called upon to preside over a body of men to whose talents and abilities and labors for the cause in the last twenty-three years is mainly due the present status of dentistry, a profession now recognized as a science and an art, not alone in the United States of America, but in every enlightened nation of the world.

Some here present may question my assertion as to whether this Association is entitled to the proud distinction to which I have just given it credit, as there were other organizations in the field, not to mention the good work accomplished by our dental colleges in providing a higher grade of education. But what other organization required the adoption of a code of ethics and the degree of doctor of dental surgery before the delegates from local or State societies were admitted to membership? None but the American Dental Association. This very restrictive proviso in its constitution immediately placed it upon a higher plane than any of its competitors, upon the principle that to secure a status as a scientific body it was necessary to invite into its fold only those who had already secured that status as individuals. She alone recognized that every fountain must be pure if the stream is to reflect from its pellucid bosom heaven's own purity. Moreover, in the transactions of this Association future generations may view the progress and history of dentistry throughout the civilized world during the past twenty-three years of its existence and were a period now to be brought to its career, so fraught with usefulness and so pregnant with grand possibilities—were not another page to be added to its vast contributions to our well beloved science, the record of what it has already accomplished and the important role it has played in the arena of dental thought would constitute a monument worthy the hands that reared it and which the remorseless tooth of time can ne'er efface. Every association, in fact every individual, has a mission to perform. Our special mission is the alleviation of human suffering. What greater incentive beyond the sordid gain of filthy lucre to stimulate the power within us to action? Surely it is the grandest and noblest work in which the skill and talents of man can be enlisted, and is indeed Godlike in its nature. We are laborers in the field of human progress, and it is only through organized association that

dental thought can be thoroughly disseminated and usefully applied. The advantages of personal interchange of thought evolved by discussions which arise in our assemblies are not reached by merely reading the journals in the seclusion of our offices—there is something in this friction of mind which stimulates to action, engenders a high-toned emulation, practically induces investigation, and leads to higher development. Much has been accomplished, yet we are only at the threshold of our science. Through our labors many new channels for thought and research have been opened, and if the flood sometimes has seemed to spread too far and lose itself in shallow or sandy places, it has nevertheless tended to fertilize them in the end. Then, therefore, with the animating knowledge of what our society has been, what it now is, and what our hopes desire it may be, let our watchword be “Onward and upward.” And as the great chieftains and mighty intellects of ancient Rome, by their abilities in the forum and their prowess upon the fields of war, bequeathed to their fellow citizens their highest and proudest distinction—a *citizen of Rome*—so, upon the peaceful plains of science and within the walks of our own specialty, with every energy and every heart enlisted under her banners, may similar honors be earned and distinguish “a member of the American Dental Association.”

The address was received with applause. The following amendment to Section VII of the Constitution was then adopted: “That all resolutions appropriating moneys, except for the legitimate expenses of the Association, shall require a two-thirds vote of all the members present.” A motion to amend Article 5, Section IV, was indefinitely postponed. Dr. Crouse stated that the Executive Committee would recommend that the afternoon and evening be devoted to the work of Sections, and that hereafter meetings should be held from 9 A. M. to 1:40 P. M., and from 8 P. M. till adjournment. The report was accepted and a motion made that a meeting be held every evening at eight o’clock. This motion created some discussion. Dr. Crouse claimed that the Sections otherwise had not time to do their work, and he desired the evening to be given to them especially. Dr. Barrett of Buffalo, thought that there was no time to lose, and that the Section Reports were mostly already prepared. Dr. William H. Atkinson, of New York, was in favor of giving time enough for legitimate

preparation of a condensation of the work of the Sections. The motion was lost.

The report of the Executive Committee was then adopted.

The Committee on Credentials reported that sixteen new members had qualified. The Publication Committee reported that arrangements had been made whereby the printing of the transactions had been done without expense to the Society by the S. S. White Dental Manufacturing Company. Dr. Field of Detroit, announced that members could get tickets for the different places of interest at half price by applying to the Committee of Arrangements.

Dr. Pierce, of Philadelphia, moved that a committee of three be appointed to draw up suitable resolutions regarding the death of Dr. Marshall H. Webb. Dr. Odell made a similar motion in regard to the death of William H. Allen, and Dr. Rehwinkel proposed a similar action concerning the death of W. H. Goddard. The motions were carried unanimously. The committee on Dr. Marshall H. Webb comprises Drs. Pierce, Darby and Perry; on Dr. Allen, Drs. Odell, Atkinson and Stockton; on Dr. Goddard, Drs. Taft, Rehwinkel and McElhaney.

The Executive Committee announced that *The Buffalo Courier* had been selected as the authorized paper for the use of the Association, and that 100 copies daily had been ordered. Discussion followed as to appropriating money for that purpose. The report was adopted without a dissenting voice.

A vote of thanks was given to the S. S. White Dental Manufacturing Company for their prompt and thorough work in attending to the matter of publication. It was moved that the different chairmen of the sections announce where their meeting would be held. The motion was carried, but their respective places of meeting are not important now; but after their announcements, the Association adjourned till 9 A. M. Sixty-seven members were present at the close of the first day.

We find afloat this brief, historic sketch of the Association, which may be interesting:

#### THE ASSOCIATION.

The last annual session was held at Cincinnati. The Society was organized in 1859. A preliminary convention was held at Niagara Falls in August of the same year. The President was W.

W. Allport, Chicago. The first session of the Association was held in Washington in July, 1860, W. H. Atkinson, Cleveland, president. There was no meeting in 1861. The Association met in Cleveland in July, 1862, George Watt, Xenia, Ohio, president; Philadelphia in 1863, W. H. Allen, New York, president; Niagara Falls, 1864, J. H. McQuillen, Philadelphia, president; Chicago, 1865, C. W. Spalding, president; Boston, 1866, C. P. Fitch, New York city, president; Cincinnati, 1867, A. Lawrence, Lowell, Mass., president; Niagara Falls, 1868, Jonathan Taft, Cincinnati, president; Saratoga Springs, 1869, Homer Judd, St. Louis, president; Nashville, 1870, W. H. Morgan, Nashville, president; White Sulphur Springs, Va., 1871, George H. Cushing, Chicago, president; Niagara Falls, 1872, P. G. C. Hunt, Indianapolis, Ind., president; Put-in-Bay, 1873, T. L. Buckingham, Philadelphia, president; Detroit, 1874, M. S. Dean, Chicago, president; Niagara Falls, 1875, A. L. Northrop, New York city, president; Philadelphia, 1876, George W. Keely, Oxford, Ohio, president; Chicago, 1877, F. H. Rehwinkel, Chillicothe, Ohio, president; Niagara Falls, 1878, H. J. McKellops, St. Louis, president; Niagara Falls, 1879, L. D. Shepard, Boston, president; Boston, 1880, C. N. Pierce, Philadelphia, president; New York, 1881, H. A. Smith, Cincinnati, president.

#### SECOND DAY—FORENOON.

The Association was called to order by Acting President Friedrichs in the International hotel parlors, Niagara Falls, at 9.30. He announced that the meeting had been called for 9 o'clock, and as a large amount of business was to be transacted the first order would be proceeded with, which was the reading of the minutes. The doctors were tardy in making their appearance, preferring to linger on the verandah of the International. The minutes were approved as read. The next order of business was the report of Section V, but Dr. Pierce of Philadelphia announced that the committee on resolutions on the death of Dr. Webb was ready to report, and the resolutions were read, as follows:

This Association desires permanent record made of the loss incurred by it, and by the dental profession, in the death of their late member, Dr. Marshall H. Webb, whose decease occurred since our last meeting. Dr. Webb was possessed of such manipulative skill as has been attained by very few dental practitioners. His prominence in this respect, which was almost universally conceded,



was not so much the result of superior natural gifts as of rare concentration and persistence in efforts to excel. He was not content unless in every operation he realized his ideal; not only earnest and conscientious, but almost censurably ambitious. He was not satisfied to work as well as the best, not even content to out-do all others, but strove always to improve on his own performances, constantly advancing his standard of requirements. There was, however, no element of selfishness in his professional labors; his was not an ignoble strife for leadership. He was ready and willing to tell to any student or practitioner the methods by which he reached his results; not only ready and willing, but eager to show all the steps of an operation, and never so happy as when he succeeded in awakening or stimulating an ambition in others to acquire a skill equal to his own. In this manner he did much to improve the quality of service in very many dental offices throughout the country. He has left many followers whose first ideas of thoroughness in dental operations date from the time of their witnessing a clinic by Dr. Webb. These have in turn become centers from which like influences are emanating, and thus, though resting from his labors, "His works do follow him."

*Resolved*, That a copy of the foregoing expression of our loss and our appreciation of Dr. Webb's worth be inscribed upon a memorial page in the transactions, and that a copy also be sent to the family of our departed friend.

C. N. PIERCE,  
E. T. DARBY,  
S. G. PERRY,

*Committee.*

Dr. Taft remarked that something more should be said in regard to Dr. Webb's death. He spoke of the ability of the late doctor, of his youth, of the high attainments he had secured. Young men should emulate his example. "Dr. Webb," he said, "has left a written record of what he has accomplished, which is published and is very valuable to everybody; valuable to the student and the practitioner. He labored not to build up himself, but for the good of the profession. This I think we should recognize and bear in mind."

Dr. A. G. Friedrichs, of New Orleans, read a paper on Syphilitic Teeth, and Dr. A. W. Harlan read one on Pyorrhea Alveolaris. These were read under Section VI.

Section V was taken up, and Dr. Bodecker, of New York, read a paper "On the Action of Arsenious Acid upon Dentinal and Pulp Tissue."

Dr. Pierce, of Philadelphia, Chairman of the Committee on Prizes, reported that the committee had in its possession a paper which was intended for a prize paper. The reading of the paper would take an hour. It was a very worthy one. Dr. Dudley, of Massachusetts, moved that the paper be referred to Section VII. The motion was discussed by Dr. Atkinson of New York, Dr. Rehwinkel of Chillicothe, Ohio, Dr. W. C. Barrett of Buffalo, Dr. Laporte of Chicago, and Dr. Buckingham of Philadelphia. Dr. Pierce said that it was the committee's privilege to withhold the paper until next year, which it had decided to do.

Very gratifying to those who intend to live another year. Nothing like hope.

Dr. Buckingham of Philadelphia read his report, as chairman of Section I. It was adopted. Dr. Edwin Richardson of London, England, was introduced and given the privileges of the floor. He said that he came to learn and not to speak. Dr. Buckingham announced that his section had no papers to present and made a few remarks on chemistry. Dr. W. H. Truman of Philadelphia, Dr. Stockton of Newark, N. J., Dr. C. F. W. Bodecker of New York, Dr. Priest of Utica, N. Y., and Dr. Matteson of Chicago, engaged in the discussion of "Artificial Dentistry." On motion of Dr. Crouse the section was passed for the time being and the rules suspended. Miscellaneous business was then proceeded with. A resolution was offered by Dr. Odell of New York "that it is the special request of the American Dental Association that exhibitors of dental instruments and supplies close their doors and keep them closed during the sessions of this Association;" and another, "that hereafter the calling of the sections shall be in regular progressive, numerical order, and that in case any section is not ready to report when called, each section shall be passed without recall until it again comes up in its regular order." Both resolutions were unanimously adopted. The Association then adjourned until 8 o'clock.

At the close of the evening session, thirty-four additional members and delegates had arrived, making an aggregate of one hundred and one.

## THIRD DAY.

The third day's proceedings opened at 9 o'clock. Only a handful of the doctors were on hand when the gavel of Dr. Fredrichs sounded. The minutes were approved and the report of the prize committee read, as follows: "Your committee to whom was assigned the duty of deciding upon the merits of essays upon the 'etiology of dental caries,' offered for a prize of \$200, which was last year appropriated by this Association for the purpose, would respectfully report that but one essay has been received, and that from the hands of Dr. W. D. Miller, of Berlin, Germany. The committee have carefully read this, and while the views contained therein are not original, many of his experiments, which are in detail, and made for the purpose of confirming his theory, have not been previously published. Your committee would therefore, in view of the original work which the author has prosecuted the past two years, the results of which are given in the paper, award to the essayist the \$200 appropriated for the purpose."

Dr. Hayhurst of New Jersey and Dr. Abbott of New York called for the reading of the resolution set forth in the report of Dr. Pierce, and a motion was made for its adoption. Dr. Atkinson of New York spoke earnestly against the wording of the resolution. An amendment was made striking out the last three words, "or its equivalent." An amendment was made to the amendment to strike out the words "or master." It then read as follows: "Resolved, that the interests of the profession and advanced dental education both demand that all dental educational institutions shall require that every student before being admitted to examination for the degree of doctor of dental surgery shall have taken two full courses of lectures." The resolution caused a lively discussion, in which Dr. W. C. Barrett, Dr. Stockton, Dr. Buckingham, Dr. Pierce, Dr. B. G. Marklein of Wisconsin, and Dr. Allport of Chicago participated. The amendments and resolution were unanimously adopted.

Dr. Pierce offered the following, which was received with applause and unanimously adopted:

*Resolved*, That the American Dental Association deems it adverse to the interests of the dental profession for any State Board of Examiners to confer a title or degree of any nature.

Dr. Crouse resumed the discussion of dental education. Dr.

Buckingham thought that a professor in a college should not be a member of any State board. Dr. Rehwinkel explained his ideas of the difference between the diploma of a college and a certificate from a board of examiners. Dr. Pierce believed that the time would come when the boards could be abandoned. Dr. Allport of Chicago took opposite views from Dr. Pierce. Dr. Hayhurst of New Jersey spoke strongly in favor of colleges, and claimed that a certificate from a State board was simply waste paper outside of the State where issued. The report was adopted as a whole.

The regular order of business was then suspended to hear the report of the committee on the death of the late President, Dr. W. H. Goddard, of Louisville. Dr. Rehwinkel read the following:

IN MEMORIAM.

The chair of our President is draped with the insignia of grief and mourning, indicating that its proper occupant is not with us, and that this Association has met with bereavement.

Dr. William H. Goddard, President of this Association, is no more. He died at his home in the city of Louisville on the morning of March 4, 1883, after a prolonged illness and great suffering.

Aside from the fact that it is the first officer of this Association whose loss we mourn, the character of our friend and colleague—as a man—was such that this Association simply honors itself by giving expression to its feelings of sincere and heart-felt sorrow at his death, profound respect for and appreciation of his many noble and manly traits of character. He was the personification of honor and integrity; conscientious and exact—even to apparent sternness—in the fulfillment of duties either assigned to him or voluntarily assumed; modest and unpretending in all his stations of life, yet possessed of that manly independence of thought and opinions which enabled him to become on important occasions a valuable counselor. Among his peers he was positive and strong in asserting his convictions, yet never in an arrogant or overbearing manner. In his exterior our friend was not endowed by nature with that smooth and polished suavity of manner and address which attracts and charms at first sight, yet his excellence and strength of character soon won for him friends and honor. With all his apparent sternness of manner, he was at



heart exceedingly kind and gentle. Honors came to him unsought, and whatever stations of life he occupied, or trusts administered, he was honest and faithful. His death is mourned by many who have lost in him a guardian, trustee, adviser or friend. In his family circle and among his more intimate friends, he was kind and affectionate. He was at times quite humorous, and enjoyed an innocent practical joke quite well.

We all know what he was to the American Dental Association. For fourteen successive years its Treasurer, until finally called forth to take the gavel and be its President. Many of us have reason to remember him as an impartial but exact and unflinching officer. In his profession he strove to be abreast of the times. There was no standing still or retrograde movement with him. He was always up and doing. His career in life has been an interesting and beautiful one. It would furnish material for an extended obituary that has been written by able and loving friends, and nothing that might be said here would be needed. In token of our affectionate regard for our departed frater, let a page of our records receive this our memorial, and the expression of the sincerest sorrow of this Association at his demise. Let his widow and family receive the assurance of our sympathy and condolence with them in their bereavement and distress, and our best wishes for their future welfare.

J. TAFT,  
F. H. REHWINKLE,  
G. W. McELHANEY,  
Committee.

On motion of Dr. McKellops, of St. Louis, it was voted to inscribe the resolutions upon a memorial page in the Transactions, and to send a copy to the family of the late Dr. Goddard. The vote was taken by rising.

Dr. F. M. Odell presented the following on the death of Dr. William H. Allen, of New York :

WHEREAS, we are called upon to mourn the loss of our estimable friend and former President of this Association, and co-member, it is therefore

*Resolved*, That in the demise of William H. Allen we have sustained a great loss, and that we sincerely sympathize with his family in this visitation ; and as a further tribute of respect, that a page be set aside in the records of this Society as a memorial of

our respect and esteem, and a copy be forwarded to the family of deceased.

This resolution was also passed unanimously by a rising vote.

The next business in order was the reading of the report of Section III, "Dental Literature and Nomenclature," Dr. J. Taft, of Cincinnati, chairman. On motion the report was received. Dr. Atkinson then read a paper, and Dr. Taft followed with a paper written by the Acting President, Dr. Friederichs. Dr. Taft stated that he had mislaid a paper by Dr. Francis, but that he would forward the same for the general report. On motion it was decided to forward the paper to the publication committee for its consideration. The section was then declared open for discussion. Dr. Crouse, of Chicago, stated that there were not more than fifteen thousand practicing dentists in the United States, and he was in favor of weeding out many of the dental journals; that one good journal containing facts and a condensed mass of literature boiled down, was just what is wanted. Dr. Abbott stated that nearly all dentists were now taking dental journals, and that the desire for dental literature was on the increase. Dr. Moore, of Columbia, S. C., said that he was appointed to compile a list of dentists, but it was found to be almost impossible to get a correct list. The section was then passed, and the Association adjourned until 8 o'clock p. m.

Nine additional members and delegates were present at the close of the third day, making the list 110.

At the evening session Dr. Pierce, chairman of the committee on place of next meeting, reported Washington, St. Louis and Saratoga. The Association proceeded to select the place by ballot. On the second ballot Saratoga was chosen, receiving 29 out of 54 votes.

The following officers were then elected:

*President*—Dr. E. T. Darby, Philadelphia.

*First Vice-President*—Dr. Stockton, New Jersey.

*Second Vice-President*—Dr. T. F. Moore, South Carolina.

*Corresponding Secretary*—Dr. A. W. Harlan, Chicago.

*Recording Secretary*—Dr. George H. Cushing, Chicago.

*Treasurer*—Dr. George W. Keely, Ohio.

*Executive Committee*—Drs. A. G. Friederichs, New Orleans; S. G. Perry, New York; W. N. Morrison, St. Louis.

## FOURTH DAY.

Many left for home before the last day's session.

The minutes of the last meeting were read and approved. The new officers were then installed. E. T. Darby, of Philadelphia, the newly elected President, on taking the chair made a short speech, in which he stated that he wished to thank the members for the courtesies extended, and he would endeavor to fulfill his position to the very best of his ability.

Under the head of miscellaneous business it was voted to increase the Secretary's salary from \$100 to \$200, to take effect immediately.

A vote of thanks was extended to the retiring President, to the Secretary, and especially to Dr. Gates, of Niagara Falls, for his assistance to the committee of arrangements.

A motion was then made and adopted that the resolution referring to the prize essays be re-considered by the committee on prize essays.

Dr. Keely, the Treasurer, then reported as follows:

Balance on hand August 5, 1883.....	\$1,446 60
Received since last meeting.....	95 00
Received dues this year.....	635 00
Total.....	\$2,176 60
Expenses.....	528 90
Balance on hand.....	\$1,647 70

The local committee, consisting of Rhein and Odell, of New York, and C. F. Rich, of Saratoga, were then appointed.

A most cordial vote of thanks was extended to the proprietors of the hotels, to the editors and reporters of the *Niagara Falls Gazette* and Buffalo papers, and also to the various railroad companies.

The President appointed the committee on publication, as follows: George H. Cushing of Chicago, S. G. Perry of New York, and A. W. Harlan, of Chicago.

The minutes of the morning were read and approved, after which the meeting adjourned to the first Tuesday in August, 1884.

[This report has aimed to give account of the important things *done* by the Association, rather than the pretty things said by individual members. If it makes the reader anxious to attend the next meeting, it may do good.—REPORTER.]

## THE CENTRAL ILLINOIS DENTAL SOCIETY.

THE Central Illinois Dental Society will hold its second annual meeting on October 9, at El Passo, Illinois.

The programme for that occasion will consist of the following papers:—

1. "Prenatal Influences as Affecting the Teeth, by Dr. Geo. H. Cushing, Chicago.

2. "Bacteria."—Dr. E. D. Swain, Chicago.

3. "Alveolitis."—Dr. A. W. Harlan, Chicago.

4. "Dentistry and Its Present Status."—Dr. K. B. Davis, Springfield, Illinois.

5. "Theories."—Dr. W. A. Johnson, Peoria.

6. "Filling Root Canals."—Dr. C. W. Spaulding, St. Louis, Missouri.

7. "The Higher Education."—Dr. J. D. Moody, Mendota, Ills.

The meeting will continue three days, and will be held in the City Hall.

Hotel rates at the Campbell House, \$1.50 per day.

C. R. TAYLOR, Secretary,  
*Streator, Ills.*

## Editor's Specials.

"Write the Vision and make it plain."

## OHIO STATE DENTAL SOCIETY.

THIS efficient Society having changed the date of its annual meeting, will probably be on hand simultaneously with our next issue, as it meets the last Wednesday of October, the 31st of the month. It will meet in Columbus, and it is hoped that the change of date will secure a larger attendance. Look out for the Committee's announcement, with the program of the meeting. Members of the profession, of this and other States, even if not active or honorary members of the Society, are always cordially welcomed, and invited to participate in the discussions, and by obtaining the consent of the Committee on Voluntary Essays, such can place any papers they wish to read before the Society, and thus have them become a part of its transactions. An extra



effort is made to have the coming meeting better than those preceding it. No good dentist, and no bad one capable of improvement, can afford to stay away.

“ Don't tell us you haven't got time—  
That other things claim your attention ;  
There's not the least reason or rhyme  
In the wisest excuse you can mention.”

Let no one “ providentially ” keep himself away.

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### AMMONIACAL DEGENERATION.

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WE have tried to impress upon our profession the importance of this subject. We have taught that when nitrogenous tissues putrefy, ammonia always results. In the atmosphere, and often elsewhere, this alkali combines with carbonic acid as fast as formed ; and it ought to be known that many of the reactions of ammonia are as readily obtained from the carbonate as from the alkali itself. We have taught that ammonia in the buccal fluids causes the lime salts to precipitate by its taking their free carbonic acid, thus rendering them unable to hold the salts in solution. Not only is tartar deposited under such conditions, but the tendency to white decay is greatly increased.

Some one, however, has tried to unteach our teachings, and has claimed that urea is more likely to be formed by the decomposition of nitrogeneous matter than ammonia, but even if this were true, it would argue against no theory we have set forth on the subject, as the formation of urea is often a step in the process of ammoniacal degeneration. This is recognized by advanced thinkers generally, as we find it so recognized in a lecture of Prof. Samuel W. Gross, on Cystitis, in which he says: “ The urea which remains behind decomposes into carbonate of ammonia, and this intensifies the inflammation.”

Some readers may think this is not practical, as applied to dental surgery ; but no man is a *practical* dentist who cannot take care of his patients' mouths, and none can do it who do not understand the degenerations of tissues, and especially ammoniacal degeneration.

We have often called the attention of our brethren to a viscid, ropy, tenacious and fetid state of the buccal secretions as an index or point in diagnosis evidencing the presence of ammonia,

and consequent danger of white decay. Pros. Gross, above quoted, has noticed an analogous condition in cystitis; and this is not surprising, but rather to be expected, in view of the fact that the same membrane lines both cavities. He says: "Another point of diagnosis may be reached by watching how and when the discharge of viscid, ropy, fetid and ammoniacal fluid comes away from the bladder." And to show that the presence of ammonia is not a thing to be sneered at, or treated with indifference, let us quote him again, from the same lecture: "This discharge is not mucus, but pus—pus acted on by ammonia, which destroys all the pus corpuscles." That which is capable of destroying the pus corpuscles has sufficient chemical energy to be hard on the blood corpuscles, or indeed, on any tissue.

But this, which was intended for only a paragraph, has grown into almost a chapter, so we will conclude by briefly stating the deleterious results likely to be caused by ammonia present in the oral cavity. As an irritating agent, it may inflame the mucous membrane; it may (will) combine with the free carbonic acid in the buccal fluids, and thus render them unable to hold the lime salts in solution, in which case they will be deposited as tartar; by the inevitable oxidation of its nitrogen, nitric acid is formed, which may corrode the teeth, or cause white decay.

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## BACTERIA AND THE GERM THEORY OF DISEASE.

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THIS is the title of a book composed of eight lectures by Dr. H. Gradle, professor of physiology Chicago Medical College, etc. And it is truly refreshing to learn that the little germ buggers are not always in mischief. On page 77 we are told: "Normal digestion is evidently complicated by putrefaction. The presence of these bacterial parasites in the intestinal canal is not at all a damage, but it seems a benefit to the animal, for they evidently supplement the action of the digestive juices. In the case of one substance at least—cellulose—the digestion in the intestinal tract of herbivora is entirely the work of bacteria."

We naturally detest putrid food; but why not eat it with a relish if it is to putrefy—rot—after it is swallowed? The book would make us think kindly of the little germs; but here comes a reviewer in *The Polyclinic*, who says: "The above statements

are not warranted by any facts quoted by the author, nor by any with which the reviewer is acquainted. On the contrary, the first step in the gastric digestion of putrefying substances is arrest of putrefaction."

The reviewer is correct. If putrefaction occurs in the gastrointestinal canal it is in spite of the digestive fluids—because they are depraved or defective in quantity.

The reader is not to infer that we deny or ignore the influence of germs in disease. We were among the first to recognize it. But we dislike to see the profession run wild in such a chase.

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### THE GERM THEORY GOING TO SEED.

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OUR boyhood was spent partly on a farm, where we were taught the importance of cutting down the burdock and other biennial weeds before seeding. But we find that this good practice has been neglected with the germ theory. In the August number of *The Polyclinic*, page 26, we find the following: "Statistics have been furnished without stint to show the direct connection of sewer gas with disease, but in spite of these figures it appears, from remarks made at a recent meeting of the College of Physicians, by a distinguished sanitary engineer, that this view of its specific morbid character is now abandoned, and that sewer gas is merely a carrier of germs."

But sulphuretted hydrogen is generally and probably always, a constituent of sewer gas, and as surely as it is breathed it will take the iron of the red corpuscles from the carbonic acid, and corpuscles thus acted on cannot be recharged with oxygen on reaching the lungs, and thus the blood is rendered unable to support the vital functions. But perhaps the next germ-dude will claim that the molecules of sulphuretted hydrogen are weeds or mosses, or tree frogs, or some other kind of germs.

We have had fair opportunities for observation, and we believe that chemistry is treated in very many medical schools as of but secondary importance. In one case at final examinations, a lower per cent of correct answers on chemistry would pass the student than was required in any other branch of study, and the professor of chemistry in this school told us that he thought such a course was common. For years we attended the meetings of a

very prominent and influential medical society, having a large membership, and not a half dozen respectable chemists could be found among its members. This is sad, but sadder still, throughout our periodical medical literature, chemistry is almost ignored. The great want, this day, of both physicians and dentists, is a better knowledge of chemistry. When such knowledge is reached, it will be more generally recognized than it is now, that chemical action generally prepares the way for germ development. In the number of *The Polyclinic* quoted above, we find this recognized in vegetable pathology. One of its selections, page 25, says:

“VEGETABLE PATHOLOGY.—In these times of belief in the etiological relation of fungi to disease, it is interesting to note the conclusions which have been drawn by Professor D. S. Penhallow, botanist and chemist at the Houghton Experiment Farm, N. Y., from his observation of “peach yellows.” This disease is associated with the development of several forms of fungi in the affected parts, and these fungi would be assigned by many observers as the cause of the disease, but Professor Penhallow is of the opinion that they are but coincident developments. He holds the same opinion with regard to the fungi that were found associated with the tomato rot. The latter subject was investigated last year by the microscopist of the Pennsylvania State Board of Agriculture, whose opinions agree with that of Prof. Penhallow, that the fungi were not the cause of the disease.”

And we fully believe that it will be found that the micro-organisms bear the same relations to dental caries—consequences rather than causes.

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### HOW NOT TO DO IT.

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WE have received a postal card asking for a specimen number of the JOURNAL. It is signed by some one, we have no idea by whom, but he knows perfectly well, and will think us stupid. He writes from Exeter Mills, but does not give us the least idea where they are, but we suppose they are on Duck Creek, but where is Duck Creek? And, as always happens, the postmark is blurred. But we send the postal card to our publishers where it properly belongs, and it is barely possible they can decipher it. Now, it is not much trouble to write your name, your postoffice, and your State plainly. Please do so hereafter.



A NEW ASSOCIATION.

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THE State Boards of Examiners organized a society at Niagara Falls during the late meeting of the American Dental Association. Iowa, Vermont, Indiana, New Jersey, Pennsylvania, Ohio, Michigan, Illinois and Georgia were represented. A constitution was adopted, a form or draft of a law was prepared as a guide for States not yet having legal enactments; and, all things considered, the meeting is likely to result in good, in the way of promoting uniformity and efficiency in the examinations. The officers of the new Association: President, Dr. J. Taft; Vice-President, Dr. G. W. McElhaney, of Georgia; Secretary and Treasurer, Dr. Geo. H. Cushing, of Chicago. The time and place of the next meeting are left to the discretion of the officers. We may hereafter lay the practical parts of their transactions before our readers, but we have not room now. The constitution is what might be expected, and the draft of the law is much like those already enacted, aiming, of course, to include the good points of all, while omitting the bad. We wish the Association abundant success.

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LET US FORM A SOCIETY.

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WE have many inducements to do so. "On motion" one of us can "take the chair." Couldn't take it far without motion, you know. Another can be secretary *pro tem*. Three more can be a committee on permanent organization. Three more, yet, a committee to prepare a constitution. After this quite a number of us can be permanent officers and standing committees, and it is a great privilege to be a *standing* committee, for when tired standing, you can "ask leave to sit again." And any member not placed in some of these positions, can move the appointment of special committees, and be appointed thereon, and you will be astonished to see how many of us can in these ways get our names into print. And as every bird, from the nightingale to the peacock, admires its own music, so we admire our own pretty names, and are delighted to see them in type.

We can organize a new society without much loss of time or additional expense. We can intrude on the time of another soci-

ety, whose members are going to meet, at any rate, in the capacity of curiosity seekers. We all belong to that society, and it rightly expects us to faithfully discharge the duties of membership. We will not meet at the precise hours set apart for its sessions. It does not meet till 10 A. M., so we will meet at 8, and if we are not at a good stopping place in our proceedings, we can crowd the old society off till 11. It adjourns at 5 P. M. We can meet at 5:15 and continue till 7, and by this time we can almost forget the old society and its claims.

We are nearly all chairmen of sections, or important committees and are expected to report to-morrow. But as the new society has taken our time and our best thoughts, we are both physically and mentally exhausted, and instead of fresh, vigorous and lively reports, we put the old society off with rehashes and platitudes, and these we read in a listless, indifferent style, that puts the members to sleep, or drives them to the cloak-rooms, and the report goes out that the old society has outlived its day, and this because we have given to side-issues time and talent justly belonging to the older society, and have thus betrayed the trust reposed in us when we were received into its membership.

Now, if any one claims that this picture is too highly colored, you need not "spit in his face and call him a liar and a horse-thief," for you can do better by calling his attention to a state of facts now existing in our profession. He will have sense enough to know that even the strongest minds cannot show much force simultaneously exerted in opposite directions. And then call his attention to a meeting of the Mississippi Valley Association, to all appearance necessarily invaded by the College Association, and unnecessarily by the Alumni Association, meetings of Boards, etc. and then ask him if it is strange that the mother society appears to be losing the force of character manifested by her in former years.

But if he is not yet convinced take him to the American Dental Association, followed by the American Dental Convention, weighted down by simultaneous meetings of the Association of Boards of Examiners, Association of Editors(?), Association of College Faculties, etc., and ask if, with this division of interest, best results can be obtained. Our largest societies are declining and something ought to be done.

## DEATH'S DOINGS.

THE following letter gave us our first intimation of the death of our dear friend, Dr. T. L. Buckingham. Our pen seems paralyzed! What can we say? If anything, it must be in thoughts half borrowed:

"He's dead," says the wind,—

"Ah, who?" asks the rose;

"The near one, the dear one, our Brother."

"How sad!" wails the wind;

"Ah me!" sighs the rose;

"And when shall we see such another!"

The letter that follows is written by one who knew him; and to know Dr. T. L. Buckingham was to esteem and love him.

PHILADELPHIA, Sept. 7th, 1883.

This day the dental profession of Philadelphia paid their final tribute to one of its best friends. Prof. Thomas Lea Buckingham, M. D., D. D. S., one of the most genial, witty and affable men in the profession, was born in the State of Delaware, March 9, 1816. He has practiced dentistry in this city since 1845; and since 1854 he has been professor in the second oldest dental college in the world, at the time of his death holding the chair of Chemistry in the Pennsylvania College of Dental Surgery. Dr. Buckingham was peculiarly a man of pluck, not only evidenced by his industry and indomitable perseverance, but as well by the tenacity with which he held to his own views, and, in his own inimitable manner, punished his adversary. No student ever graduated from the school with which the Professor was so long connected, but with feelings of warm friendship, and a keen appreciation of his genial and encouraging spirit.

Though enfeebled to an alarming extent, from mal-nutrition, he yet made the tiresome journey from his home to Niagara Falls to attend the last annual meeting of the American Dental Association, and while there was not absent from any of its sessions, taking a lively interest in every subject under consideration. Philadelphia to-day has parted with not only one of its oldest dental practitioners, but one who will be remembered as being ever ready to render strength and encouragement to the extent of his ability. Long will his memory be cherished by those who knew him best.

C. N. P.

## Varieties.

BY J. E. CRAVENS., D. D. S., INDIANAPOLIS, IND.

### GELSEMINUM SEMPERVIRENS IN FACIAL NEURALGIA.

DR. SPENCER THOMPSON, of Torquay, thus replies to a correspondent in the "Midland Medical Miscellany:" "My usual dose, unless I have reason to know or believe the patient is very sensitive, is *m xx*, repeating in an hour if there is no relief, and if there is no giddiness or affection of vision, I may give a third dose in four or five hours; but it is rarely required in suitable cases, and I seldom give less than *m xv*. I have found *m v* relieve in a very sensitive subject. I mention 'suitable cases,' for my own experience has told me that gelseminum has little curative effect in any neuralgic affection but that involving the teeth and alveoli of upper and lower jaw. In such it often acts like a charm."

### LOCAL ACTION OF MEDICAL SUBSTANCES UPON THE TEETH.

AFTER a series of experiments continued over a considerable space of time, M. Maurel has determined the following facts in regard to the action of various substances upon the structure of teeth. Arsenious acid has no influence whatever upon either the enamel, cement or dentine. Citric acid attacks and renders soft and friable all the dental structure. Tannic acid is without action on the enamel, but colors a light brown both the dentine and cement, and renders the former softer. Phenol is without effect on the enamel; colors the cement brown, but its effect on dentine is not known. Vinaigre de

Bully (a cosmetic) is without action on the dental structure. Common salt gives to dental structures a light green tint; is without effect upon the hardness of cement, but, under certain circumstances, appears to soften the enamel. Its action on the dentine is not known. Chloride of zinc has no effect on the enamel; renders the cement transparent, but has little appreciable influence upon dentine. Chloride of antimony attacks the enamel in the most attractive manner, and the cement and dentine with nearly the same activity. Chloride of iron renders enamel brittle, softens the cement, and likewise, probably, dentine.—*Bulletin Gen. de Therap.*

### APHTHOUS SORE MOUTHS IN INFANTS.

R. Sodium Sulph., 30 grs.  
Glycerine and Water, of each  
 $\frac{1}{2}$  ounce.

Use on swab every two hours.—*Wul-  
lace in Coll. Clin. Record.*

### LOCAL ANÆSTHESIA.

By the following method abscesses, felons, boils, etc., can be opened with little or no pain:

Sharpen to a point a stick about six inches in length. Dip the point into liquified carbolic acid, and apply to the point chosen for opening. After a moment's delay, cut the skin with a knife; then take a little of the acid on the point of the stick and apply in the incision with a gentle rotary motion. By frequent applications of the acid, and a gentle rotary motion of the stick persistently applied, an opening can be



made to the required depth. The carbolic acid produced first anæsthesia, then death of the parts to which it is applied in the foregoing manner.—*Southern Practitioner.*

R Chloral Hydrate, }  
 Gum Camphor } . a a 3 ij.  
 Morphia Sul., . . . 3 ss.  
 Chloroform, . . . 3 j.

Mix, paint the gums, using camel's hair brush or swab of cotton. Dry rapidly with chip-blower, and repeat the painting, etc., until insensibility ensues.

R Chloroform, . . . . 3 ij.  
 Camphor, . . . . 3 j.  
 Apply as above.

R Crystalizable Acetic Acid, 1 part.  
 Chloroform, . . . . 20 "  
 Apply as above.  
 [Ext. from *Medical News.*]

#### A METHOD OF MOUNTING BONWILL CROWNS.

HAVING the apex of the root filled, articulate the crown to the root with as perfect a joint as possible; insert the platina-pin in the crown till it appears at the counter-opening; fasten it at this point with wire, or plaster and sand; fill the counter-opening with solder and hold in the flame of a spirit-lamp, or, if preferable, use the blow-pipe. The solder will of course attach itself to the platina-pin, and, when filed down, have the appearance of a gold filling. Soft solder could be used in the same manner. The platina-pin must now be ruffed up and adjusted to the root; fill the root with any hard, quick-setting cement, and push the crown home—holding in place for a minute or two until the cement hardens; scrape away any excess that may ooze out around the neck, and the operation is finished. In addition to the above, should the root be frail or broken off under the

gum, take a measure of the circumference of the root with heavy tin foil or binding-wire; make a gold band about one-eighth of an inch in breadth, and having filed it to correspond with the festoons of the gums, force it over the root, allowing it to extend slightly above the margin of the gum. The crown may now be set in this, and the gold burnished close to the tooth. Such an operation insures protection to the root and additional strength to the crown. It is the experience of the writer that the above is one of the best methods of mounting Bonwill crowns, and that under any conditions cement is preferable to amalgam.—*C. L. Hunterford in Missouri Dental Journal.*

#### DENTAL EDUCATION.

IN looking over a report of transactions of the last meeting of the Southern Dental Association, we were particularly impressed with the volume of good sense and sound argument that bubbles forth all through the following extracts from remarks made by Dr. W. H. Morgan, Nashville.—[ED.]

"If the A. M. were essential, at least two men who have been President of the United States would never have reached that eminence. Taft produced his work on dentistry, which has been for many years a standard text-book in the dental colleges, before he had the degree M. D., and the speaker believed he never had the A. M. Yet he is one of the brightest men in the profession. Had that requirement been insisted on when he (Dr. Morgan) entered dentistry it would have cut him out, and he did not think he had disgraced the profession. So much in that direction. Our dental colleges are not responsible for the condition of education, and they have caused most of the improvements that have been introduced within the last forty

years. If all the gentlemen who find fault with the colleges had been in the position that the speaker had occupied for the last few years, and had seen the manoeuvres resorted to to obtain the college degree without fulfilling the requirements, they would estimate the colleges higher. They have applications from every quarter, which shows a high appreciation of the colleges as representing the standard. Gentlemen who have served in the various State boards of examiners know what the influences are which are brought to bear to compel them to deviate from a proper standard of requirements. He did not approve of long studentship in a private office for the intending college student; but would prefer to take the students raw. If they have been long under a preceptor there is much to unlearn, as a rule. Of course, there are exceptions; some men prepare their students thoroughly, and when properly taught by the preceptor the student has a great advantage over those who come raw; but a majority of those who come up to the colleges from private preceptors have been injured by the experience. In the last class graduated from the institution with which he is connected, there were four raw men,—that is, men who previous to their attendance upon the college sessions had no knowledge of dentistry,—and they were examined with men who had had from ten to twenty years' experience in practice. The raw men had an average of from 80 to 90 per cent., while the others were just able to pass. Such facts speak for themselves. There is a general complaint that the curriculum is not broad enough. When the dental profession make a demand for a broader curriculum it will be complied with. Some contend that the dentist should have the medical degree as a basis, the same as the oculist, the ophthalmologist, and

other specialists in medicine. The speaker took the ground that the oculist would be better taught by the professional oculist. There are many things taught in medicine which are not needed by the specialist. They only serve to make him broader and higher; they are desirable, but not necessary. Take yellow fever, for example; of what value would a knowledge of its treatment be to the dentist? None whatever. But everything that will tend to make him a better dentist should be taught to him and explained to him in such a manner as to make him master of it. The scheme of dental education is constantly being raised higher and higher as the needs of the profession require it.

Dr. Morgan said, if he had the announcement of the Chicago Dental Infirmary with him, he would undertake to show that it proposes to graduate men who have not the M. D. He expected to bring it, but found he had overlooked it. He heartily wished that every dentist had earned his M. D. before going on to dentistry: not that he believed it would have made him any better dentist, but it would have made him a broader man. A classical education is not always an advantage. We have no less an authority than Charles Francis Adams on record as opposing the teaching of the dead languages. Americans are practical, and we are indoctrinating the whole world with our practical ideas. A thorough collegiate course sometimes disqualifies a man for a practical life, though this is more frequently seen in other directions than in our profession. Students spend their time in delving into things that are of no use to them practically. But it is said we must develop the mind. The better way would be to spend the time in technical studies, and develop the mind in that direction. What we, as dentists, want to know, is that which

we shall use practically first. The laws of physics are not of the first importance to the dentist. Let him know all of these if he can, but let him first know what will be of practical value to him in his profession.—*Taken from Cosmos Report.*

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#### NITRO-GLYCERINE FOR TOOTH-ACHE.

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F. P. ATKINSON, in *Practitioner*, recommends the use of a one per cent. solution of nitro-glycerine for tooth-ache. Apply on cotton-wool placed in cavity of decay. The relief is instantaneous.

Dr. Atkinson does not give any precautions, but we would suggest that the patient be *instructed* to close the teeth, *gently*, as it were, after the application. And the dentist's bill should be presented *softly*, to avoid *jarring* the tender sensibilities of the patient. As to kicking a patient down stairs after such an application to his tooth, that would be absolutely out of the question.—Ed.

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#### ARISTOCRATIC DENTISTRY.

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MRS. BANCROFT, the actress, visited recently one of the most celebrated dentists in London, who seldom handles anything but aristocratic jaws, to have her teeth examined and operated on. Knowing the weakness of the expert, she asked what his charge was, but he refused to say until he had completed what was but an inspection and some cleaning. This done, he said his charge was \$250. The artiste protested, and offered \$100, which, she said, was all the money she had with her. She added that she had brought so much because she was told that the charge would be exorbitant, and provided herself with a sum expected to meet the highest figure. She declares that

the fashionable dentist took the \$100, and clapping his back to the door, would not allow her to leave until she had signed a note for the rest. The case is to be heard in court.—*New York Sun.*

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#### SYMPATHY.

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In front of a New York dentist's shop where some wax heads are moved by machinery and undergo a transformation from their poor teeth to good and perfect ones, their eyes rolling and their heads moving from side to side, crowds constantly gather. It is an ingenious advertisement for the dentist, and the people who stop and gaze unconsciously move their jaws, and roll their eyes in sympathy and in time with the automatic figures.

Suddenly the other day a school girl began to labor excitedly over a mouthful of chewing gum; the black eyes of an Italian boy flashed from side to side; some Chinamen's heads went up and down, and their pigtailed cracked like whiplashes; and an old man's head wagged from side to side as though it would come off. The faces of others showed great excitement, their heads wagging, their eyes rolled wildly, and their arms flourished; so that within less than a minute the crowd seemed to have gone mad, and was indulging in the most violent and absurd antics.

At last some one came to his senses, and started away at a brisk pace. In a few seconds there was a successful stampede. Whatever had been regulating the movement of the wax figures had given out, and the motive power was running at the top of its speed. The figures were gnashing their teeth and toothless gums, rolling their eyes, shaking their heads, and flourishing their arms in a way that made them tremble, and the staring crowd did the same in sympathy.

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Contributions.

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"A word fitly spoken is like apples of gold"—SOLOMON.

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"BEST MEANS OF PRESERVING THE TEETH."

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BY M. H. CHAPPELL, D. D. S.,

Professor of Pathology and Therapeutics, Indiana Dental College, President of Indiana State Society, Member of State Board of Examiners, etc., etc.

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TWENTY-FIVE years have passed since the Indiana State Dental Association presented this subject upon her programs for discussion.

I am not prepared to epitomize the opinions advanced then, or those made practical during these long years of history, but shall content myself in giving a resume of what we now believe to be consistent and essentials in preserving teeth, which shall include the reasons for anticipated failures or for reasonable success.

A knowledge of anatomy, including histology and micro-



scopy, physiology, pathology, chemistry, therapeutics, and their associated arts, are indispensable on the part of every practitioner, with a high degree of common sense, carefulness, and honesty, in the proper application of his requirements, with a reasonable degree of ability to execute with his fingers, what his cultured mind conceives, therefore a professional artist. And the patient must possess a fair degree of appreciation, culture, and care, so as to render assistance in caring for and preserving his dental organs.

One of the greatest obstacles, if not curses of this country, is the large army of ignorant, unskilled pretenders or cranks. They are found in every branch of industry, and in every locality. They blockade the trades, and commerce, and even insinuate their pestiferous presence into the Holy sanctuary; and especially are they found in our profession.

They are a thousand times more unreasonable, pesky, and destructive to our professional efforts, than the much-maligned micro-organisms. And I venture the assertion that our profession will not arrive to that degree of usefulness and honor that we desire until, by associated effort and legal restriction, we place our standard upon the high rock of science and true culture.

In the practice of dentistry we find the largest sphere of usefulness requiring scientific attainments, in our operations and care of the natural teeth. And here we observe also the greatest number of failures, or at least it is so charged. We frequently hear of the unbounded faith in filling teeth, when it is done by first-class dentists; and we sometimes hear that unwelcome reflection, "filling teeth doesn't save them." "I had my teeth filled, and they decayed easier and faster than ever."

We must remember the circumstances surrounding these cases. In the first place, as a rule, first-class dentists usually do much better service, and receive higher fees, hence a different class of patients. While the poorer dentists have indifferent patients, and receive smaller fees, hence he turns to the old adage, "dead men tell no tales," and, as a rule, extracts teeth in great numbers, and drifts into *cheap* dentistry; and we conclude that such dentistry is at par with the horse that sold for one dollar--he was that kind of a horse.

Then we find the dentist made a mistake in the patient's appreciation of his teeth, and would not care for them by keeping them clean, or he represented his services too extravagantly to

get the job, and, from ignorance, placed first-class filling material in third or fourth-class teeth; or he may have put fourth-class fillings in first-class teeth, and operated in an indifferent manner, giving no attention to perfect preparation of the cavity, as to conserve the tooth life, or to leave the tooth self-cleansing when filled. Then, again, he may have filled the teeth perfectly, as to the preparation of cavity, and introduction of a first-class filling, in a mouth where the development of the teeth was normal, as to texture, but with an abnormal development of the maxilla, presenting an irregular arrangement of the teeth. Hence, during a systemic change, sickness or struma, the dyscrasia that causes the first malformation will now become apparent, with deranged secretory, circulatory, and excretory functions, and deposits of mucus, broken down epithelia, with nitrogenous substances lodging between these irregular teeth, and then decomposition, fermentation, simultaneous, we have caries of tooth and formation of micro-organisms. The material in the process of decomposition, the chemical agents controlling will determine the character of the decay. And, like the track of an animal in the mud, clay or rock, we can classify, and give, or modify, our treatment to suit the case.

The argument that we must contour *all* fillings, or that our work can be done quick and cheap, are both errors. The cases above mentioned, when the abnormal or careless tendencies predominate, we are derelict in duty if we do not plainly advise, and make free separations, and so shape our cavities and finish the tooth that when filled it will be self-cleansing. Otherwise evil results will follow.

Since the introduction of the paper, or flexible discs, cavities in the proximal surfaces can be curve-shaped (like the line of beauty), so as to have free buccal, or palatine, or lingual separations, without the annoying V-shaped coronial cuts, which cause so much trouble from food impaction.

Severe sickness, gestation, and lactation, with imperfect digestion, will cause or promote resorption or excessive waste of the tissues, including bone, dentine and cementum; and with these physiological and pathological conditions are associated also with a majority of children when the caries is white, or yellow, open tubuli, green stain, failure to cleanliness, with low vitality, we readily determine that metal fillings are not advisable, and gutta

percha must be used, and allowed to remain six months to two years, or until a normal condition is manifested. Then fine metal fillings can be inserted.

BACTERIA.—For several years our journals have been burdened with an immense quantity and quality of “bugs.” Biologists, botanists, and bug-ists have developed as rapidly as the *troruld* (yeast plant) itself; and we have been enlightened that these destructive tooth eaters are classified as carnivorous and herbivorous, bovine, canine, and feline, oviparous, mammiferous and marsupial; and we fear that a long-suffering people will be compelled to read the daily reports of the games lost and won of a select nine playing the great National game. Still we admit the presence of *Leptothrix* in the mouth, even in a state of health, while the various forms of *Bacillus*, *Vibriones*, and the *Micrococci*, anthraxis, bacillus and other organisms as may be found in malignant pustule, splenic fever, etc., only co-exist with animal putrefaction, and but seldom or never in the mouth of patients of ordinary health.

Under certain conditions, we find organisms in the blood and urine, and in the various glands of the body; but it does not follow that those micro-organisms cause the abnormal conditions that produce the germ. Such a condition of things would be contrary to common sense and all laws of biology. It would make the creature the creator, before the Creator had produced the creature.

When we understand the ætiology of the various diseases, also the phenomena leading from ordinary food, through the process of digestion, forming pabulum, to protoplasm, and forming corpuscles, or vital animal life, then in the disturbance of this physiological function, pathological conditions arise, with a new train of phenomena to meet the designs of an all-wise Creator, and to the return of health. After we have mastered this study, and view the various stages of waste and repair, as visible as “Sherman’s March to the Sea,” then we will be better acquainted with chemical action, and be able to predicate a theory founded on fact, and not upon hypothesis. At our “semi-Centennial” meeting we will know much more on this subject than we do now. The select nine will have returned from their great tour around the world, and each member will be named after some famous *bug*.

CLINICAL.—In giving a detailed account of our various opera-

tions upon the teeth, we will first discuss "*Odontolithus*" (salivary calculus), its cause, removal and treatment.

[To be continued.]

## REGULATING TEETH—A CASE IN PRACTICE.

BY GEORGE W. KEELY, D. D. S.

FIGURE 1 shows perfectly the arrangement and articulation of the teeth of a young man aged twenty years—after I had wedged forward the first left superior molar, as seen in the cut. He had lost the second bicuspid on this side, at what time I do not know. The first inferior molars (permanent) were extracted when he was about ten years old. This caused the second molars when erupted to come forward and take up two-thirds of the space made vacant by the first, as also the earlier eruption of the third molars. When he came to me in January, 1870, the third inferior, and second superior molars were the only teeth that articulated.

The first superior molar was wedged forward during the time he was having some teeth filled, and before we had decided how it was possible to make the anterior teeth articulate. The second right inferior molar was also drawn forward near an eighth of an inch, the space left between it and the second bicuspid. The space between all the anterior teeth was fully an eighth of an inch. This was perhaps wholly caused by the early loss of the first permanent inferior molars—as irregularity does not appear in any of the family—the parents having unusually well developed dental arches. His enun-

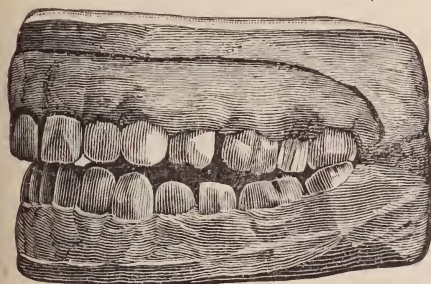


Fig. 1.

ciation was very defective, and he complained of being constantly annoyed by not being able to bring his teeth together—his jaws felt tired all the time—and he could only masticate his food imperfectly on his four posterior molars.

The second superior molars were perfectly sound, as also the



third inferior, these being unusually well developed, for the reason they were given ample room to erupt. As the only possible means for relief and benefit, we decided that the extraction of the second superior molars was clearly indicated. After this was done, the patient said he had never before felt so comfortable—and was perfectly enthusiastic over the improvement. We then cut some sharp cusps from the anterior molars, so the incline on antagonizing would drive them forward, after which the impressions were taken, and the model as shown in Figure 2. The second inferior and first superior molars are in contact, as also all the anterior teeth, excepting the bicuspid.

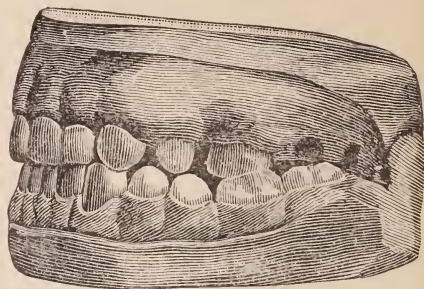


Fig. 2.

We diagnosed this case thus:

1st. That the removal of the second superior molar was the only possible means by which all the anterior teeth could be brought in contact. 2d. That it was only a question of a short time before the third molar would erupt, and take the place made vacant by the second—and be better developed for having ample space, and come squarely in contact with the third inferior molar. 3d. That within a few years the bicuspids would elongate and come in contact.

My patient being an energetic young man went West to grow up with the country, and I did not see him again until January, 1880 — ten long years, but during this time I never lost faith in my diagnosis of his case, the result of which is shown in Figure 3.



Fig. 3.

It can be seen by this model that the third superior molar took the place made vacant by the removal of the second—and that the bicuspids are in contact, “Just as the angels told me they would be,” every tooth in his mouth antagonizing.

### A MISTAKE.

IN the OHIO STATE JOURNAL OF DENTAL SCIENCE for the current month, page 500, C. N. P. says the Pennsylvania College of Dental Surgery existed in 1854, and that it is "the second oldest dental college in the world." The announcements of this institution show that its first session commenced in the autumn of 1855.

The Ohio College of Dental Surgery is the second oldest dental college in the world, (the Baltimore College being six years its senior), its first session having commenced in the autumn of 1845.

He who would write history should be careful to state facts.  
October 9, 1883. A. B.

We believe the above is in accordance with the facts of history. We found, on coming into the dental profession, the names of Drs. Arthur and Berry associated, the one as the first graduate of the first, and the other as the first graduate of the second dental college.

We are under the impression that the oldest charter of a dental college east of Ohio, and north of "Mason and Dixon," is unrepresented by a working institution. But we may be mistaken.

ED. JOURNAL.

### FUNGOID GROWTH FROM A CARIOUS TOOTH.

*Editor Ohio State Journal of Dental Science:*

IF the following case is worthy of notice, it is at your service: On examination of the mouth I discovered a fungoid growth of the gum, the size of an ordinary buckeye, originating from the buccal surface, and between the first and third superior right molars. The patient reported that about six months before, he had a tooth extracted by a physician and after the gum had apparently healed he noticed a lump the size of a pea, in the vacant space, which had grown to the present size. I advised its removal, to which he at once consented. Considerable hemorrhage followed the operation, which was readily controlled by pressure and the perchloride of iron. There seems to be no further trouble.

Respectfully,

G. W. COCHRAN, *Toronto, Ohio.*

Though seeming of but slight importance, tumors like that above described, often fall into the hands of cancer quacks, and the patients are frightened, tortured and robbed. Their removal is generally almost painless, and the hemorrhage is readily controlled in most cases. It was the patient's good fortune to fall into good hands.

ED. JOURNAL.

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## Societies.

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"Wherewith one may edify another."

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THE following pages are of such a nature, that they may be wanted in the way of reference by the profession, regardless of locality. On this principle we insert them, and not exactly because they are new. Several States are yet without laws regulating the practice of dentistry, and this ought not so to be. For the benefit of such we take pleasure in making space for them. On another page, we shall try to give a list of the States that have dental laws. Let the others follow the good example set before them.

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## PROCEEDINGS.

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TRANSACTIONS OF THE ASSOCIATION OF STATE BOARDS OF DENTAL EXAMINERS.

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NIAGARA FALLS, August 6, 1883.

Pursuant to adjournment, the Convention held at Lexington, Ky., Feb. 20, 1883, of various State Boards of Examiners, met at the Cataract House, at 2:30 P. M., of this day.

THE FOLLOWING STATE BOARDS WERE REPRESENTED:—

Iowa, by Dr. W. P. Dickinson, of Dubuque.

Vermont, by Drs. James Lewis, of Burlington, and G. H. Swift, of Manchester.

Indiana, by Drs. P. G. C. Hunt, of Indianapolis, and S. B. Brown, of Fort Wayne, and M. H. Chappell, of Knightstown.

New Jersey, by Dr. J. Hayhurst, of Lambertsville.

Pennsylvania, by Dr. C. N. Peirce, of Philadelphia.

Ohio, by Dr. H. A. Smith, of Cincinnati, and Drs. Butler, of Cleveland, J. Taft, of Cincinnati, I. Williams, New Philadelphia, and F. H. Rehwinkel, of Chillicothe.

Michigan, by Drs. G. R. Thomas, of Detroit, and J. A. Robinson, of Jackson.

Illinois, by Drs. G. H. Cushing and A. W. Harlan, of Chicago.

Georgia, by J. N. Coyle, of Thomasville, and G. W. McElhaney, of Columbus.

On motion of Dr. Smith, a temporary organization was effected, and Dr. J. Taft was chosen Chairman, and Geo. H. Cushing, Secretary.

On motion of Dr. Peirce, it was voted, that each Board should cast ten votes, and that the ten votes should be equally divided between the members of any Board present.

On motion of Dr. Peirce, it was voted to proceed to effect a permanent organization.

On motion, the following were appointed a committee to draft a Constitution:—Geo. H. Cushing, C. N. Peirce, and H. A. Smith.

A recess was taken to enable the committee to prepare their report.

The committee reported a draft of a Constitution which was voted upon, section by section, and finally adopted as a whole, as follows:—

#### CONSTITUTION.

NAME.—This organization shall be known by the name of the National Association of Dental Examiners.

#### ARTICLE II.

OBJECTS.—The objects of this Association, shall be to secure through the operation of the various State Examining Boards, a high and uniform standard of qualification for dental practitioners, and so far as practicable, uniformity of methods in the working of these Boards, and of legislation in creating them.

#### ARTICLE III.

MEMBERS.—This Association shall consist of such different State Boards of Dental Examiners as may elect to join this National Association. They may be represented either by a delegate



or delegates duly authorized, or by the whole Board. Certificates from the proper officers of any Board will be necessary to entitle such Board to representation in this body.

#### ARTICLE IV.

VOTES.—Each State Board shall be entitled to ten votes. If at any meeting of this Association but one member of any Board be present, he shall cast the whole number. In case there is more than one member present, the ten votes of that Board shall be equally distributed among and cast by those members of said Board who are present.

#### ARTICLE V.

DUES.—Each State Board becoming connected with this Association shall pay annually to the Treasurer the sum of five dollars.

#### ARTICLE VI.

OFFICERS.—The officers of this Association shall be a President, Vice-President, and Secretary and Treasurer. The last named two officers combined in one. They shall be elected by ballot, without nomination, and shall hold their appointments for one year, or until their successors are elected and qualified. A majority of all the votes cast shall be necessary to a choice.

#### ARTICLE VII.

DUTIES OF OFFICERS.—The President shall preside at all the meetings according to parliamentary usage, as laid down in Cushing's Manual. The Vice-President shall perform the duties of the President, in case of the latter's absence or inability. The Secretary and Treasurer shall keep correct minutes of the proceedings, give due notice of meetings, and attend to the necessary correspondence. He shall receive and hold all moneys belonging to the Association, and from them shall pay all drafts of the President, countersigned by the Secretary. His accounts shall be audited by a committee of three, appointed annually for that purpose.

#### ARTICLE VIII.

OBLIGATIONS OF MEMBERS.—All State Boards belonging to this Association, shall be bound by its action, so long as they continue members of it.

Any Board refusing to be bound by the action of this body, shall from that time cease to be a member thereof.

## ARTICLE IX.

QUORUM.—The representatives of five State Boards shall constitute a quorum for the transaction of business.

## ARTICLE X.

MEETINGS.—There shall be held annually a meeting of this Association, at such time and place as the Association may determine.

The President may call a meeting at any time during the year, upon the written request of five State Boards.

## ARTICLE XI.

AMENDMENTS.—Amendments to this Constitution may be made at any annual meeting, by the consent of all the members present. In case of any opposition, notification in writing shall be made of any such proposed change, and shall be laid over for one year, for final action, when the amendment can only be adopted by an affirmative vote of three-fourths of the voters present.

On motion, the election of officers was proceeded with, resulting in the choice of Dr. J. Taft, of Cincinnati, as President; Dr. G. W. McElhaney, of Columbus, Georgia, Vice-President; Dr. Geo. H. Cushing, of Chicago, Secretary and Treasurer.

On motion, adjourned till 8 P. M.

The Association met pursuant to adjournment, President Taft in the chair.

The minutes of the afternoon session were read and approved.

Dr. Cushing moved that this Association recommend to the different State Boards a standard for examination, which shall be twenty-five per cent. higher than that adopted at Lexington.

Discussed by Drs. Hunt, Chappell, Thomas, Lewis, Hayhurst, Taft, Smith, Rehwinkel, Williams, McElhaney, Harlan and Peirce.

It was then adopted.

On motion of Dr. Peirce, the following Committee was appointed to present subjects for the consideration of the Association for to-morrow:—

Drs. Peirce, McElhaney and Lewis.

Adjourned till 8 o'clock A. M. to-morrow.

TUESDAY, August 7, 8 A. M.

Association called to order by the President, Dr. Taft.

The minutes were read and approved.

The following members then paid their dues:—

Pennsylvania, Ohio, Illinois, Vermont, Indiana, Iowa, Michigan and Georgia.

The Committee appointed yesterday, to report subjects for consideration, this morning submitted their report in the form of the following resolutions:—

*Resolved*, That a Committee of two, to consist of the President and Vice-President, be appointed, to act with the Secretary, in carrying out the requests of this Association.

*Resolved*, That this Association enjoin its members to accept the diplomas of no college which does not require two full regular courses of lectures—or their equivalent—one full course, and five years practice, as a pre-requisite for graduation.

*Resolved*, That this Association insists that no Board now connected with this body, shall confer degrees or titles of any nature.

*Resolved*, That this Association recommend to the State Societies, of all States, where no law exists, the necessity for an immediate effort to secure such legislation.

*Resolved*, That this Association furnish all State Societies with copies of a well-digested law, so that uniformity in legislation, as far as practicable, may be attained.

Dr. Thomas offered the following. —

*Resolved*, That this Association recommend to the various State Boards of Examiners, a form of certificate, to be issued by said State Boards to those found upon examination to be qualified to practice dentistry.

On motion of Dr. Peirce, it was voted, that where no objection was raised, the vote upon the foregoing resolutions should be taken *viva voce*, but if objection is made, then the vote should be taken upon the calling of the States.

After some general discussion, the above six resolutions were adopted in the order in which they appear, by a *viva voce* vote.

On motion of Dr. Harlan, the following Committee was

appointed to draft a law for recommendation to the various States, desiring to procure such legislation:—

Drs. Harlan, Taft, Peirce, Coyle and Lewis.

On motion, adjourned, till 4:30 P. M.

TUESDAY, August 7, 4:30 P. M.

The Association met pursuant to adjournment.

Dr. Taft in the chair.

The minutes were read and approved.

The bill of Dr. J. Taft, for printing proceedings of Lexington meeting, amounting to seventeen dollars, was ordered paid.

The draft of a law, to be recommended to the different States, was then adopted as follows:—

AN ACT—To insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of———.

SECTION I.—Be it enacted by the people of the State of———, represented in the General Assembly, that it shall be unlawful for any person who is not at the time of the passage of this Act, engaged in the practice of dentistry in this State, to commence such practice, unless he or she shall have obtained a certificate as hereinafter provided.

SEC. II.—A Board of Examiners, to consist of five practicing dentists, is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this Act.

The members of said Board shall be appointed by the Governor, who shall select them from ten candidates whose names shall be furnished him by the State Dental Society. Three members at least of this Board shall be members of the State Dental Society.

The term for which the members of said Board shall hold their offices, shall be five years, *except* that the members of the Board first to be appointed under this Act, shall hold their offices for the term of one, two, three, four and five years, respectively, and until their successors shall be duly appointed.

In case of a vacancy occurring in said Board, such vacancy shall be filled by the Governor from names presented to him by the ——State Dental Society.



It shall be the duty of the————State Dental Society, to present twice the number of names to the Governor, of those to be appointed.

SEC. III.—Said Board shall choose one of its members President, and one the Secretary, thereof, and it shall meet at least once in each year, and as much oftener, and at such times and places, as it may deem necessary. A majority of said Board shall at all times constitute a quorum, and the proceedings thereof shall at all reasonable times be open to public inspection.

SEC. IV.—Within six months from the time that this Act takes effect, it shall be the duty of every person, who is at that time engaged in the practice of dentistry, in this State, to cause his or her name and residence, or place of business, to be registered with said Board of Examiners, who shall keep a book for that purpose.

The statement of every such person shall be verified under oath, before a Notary Public or Justice of the Peace, in such manner as may be prescribed by the Board of Examiners.

Every person who shall so register with said Board, as a practitioner of dentistry, may continue to practice the same as such, without incurring any of the liabilities, or penalties provided in this act, and shall pay to the Board of Examiners for such registration a fee of one dollar.

It shall be the duty of the Board of Examiners to forward to the County Clerk of each county in the State, a certified list of the names of all persons residing in his county, who have registered in accordance with the provisions of this act; and it shall be the duty of all County Clerks to register such names in a book to be kept for that purpose.

SEC. V.—Any and all persons who shall so desire may appear before said Board, at any of its regular meetings and be examined with reference to their knowledge and skill in dental surgery; and if the examination of any such person or persons shall prove satisfactory to said Board, the Board of Examiners shall issue to such persons as they shall find to possess the requisite qualifications, a certificate to that effect, in accordance with the provisions of this act. Said Board shall also endorse as satisfactory diplomas from any reputable dental college, when satisfied with the character of

such institution, upon the holder of such diploma furnishing evidence satisfactory to the Board, of his or her right to the same.

All certificates issued by said Board shall be signed by its officers, and such certificates shall be *prima facie* evidence of the right of the holder to practice dentistry in the State of ———.

SEC. VI.—Any person who shall violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and upon conviction may be fined not less than fifty dollars, or more than two hundred dollars, or be confined six months in the County jail.

All fines received under this act shall be paid into the Common School Fund, of the county, in which such conviction takes place.

SEC. VII.—In order to provide the means of carrying out and maintaining the provisions of this act, the said Board of Examiners may charge each person, applying to, or appearing before them, for examination for a certificate of qualification; a fee of ten dollars, which fee shall in no case be returned; and out of the funds coming into the possession of the Board, from the fees so charged, the members of said Board may receive as compensation the sum of five dollars for each day actually engaged in the duties of their office, and all legitimate and necessary expenses incurred in attending the meetings of said Board. Said expenses shall be paid from the fees and penalties received by the Board under the provisions of this act. And no part of the salary or other expenses of the Board shall ever be paid out of the State Treasury.

All moneys received in excess of said *per diem* allowance, and other expenses, above provided for, shall be held by the Secretary of said Board, as a special fund for meeting the expenses of said Board and carrying out the provisions of this act, he giving such bond as the Board shall from time to time direct.

And said Board shall make an annual report of its proceedings to the Governor by the 15th of December of each year, together with an account of all moneys received and disbursed by them pursuant to this act.

SEC. VIII.—Any person who shall receive a certificate of qualification from said Board shall cause his or her certificate to

be registered with the County Clerk of any county, or counties in which such persons may desire to engage in the practice of dentistry, and the County Clerks of the several counties in this State shall charge for registering such certificates, a fee of twenty five cents for such registration.

Any failure, neglect or refusal on the part of any person holding such certificate to register the same with the County Clerk, as above directed, for a period of six months, shall work a forfeiture of the certificate, and no certificate when once forfeited shall be restored except upon the payment to the said Board of Examiners, of the sum of twenty-five dollars as a penalty for such neglect, failure, or refusal.

SEC. IX.—Any person who shall knowingly and falsely claim or pretend to have or hold a certificate of license, diploma, or degree granted by any society, or who shall falsely and with intent to deceive the public, claim or pretend to be a graduate from any incorporated Dental College, not being such graduate, shall be deemed guilty of a misdemeanor, and shall be liable to the same penalty as provided in Section VI of this act.

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On motion, the time and place of our next meeting was left to be fixed by the Officers of the Association.

On motion, a cordial and earnest invitation was extended to all State Boards of Dental Examiners to join this Association and co-operate with us in our work.

On motion, the Secretary was instructed to publish the proceedings of this Association and to forward copies to all State Boards of Examiners.

The following resolution was adopted:—

*Resolved*, That all resolutions adopted by this Association at this meeting, are offered to the different State Boards of Examiners as bearing especially upon the future actions of the Boards.

The minutes were then read and approved, and the Association adjourned.

GEO. H. CUSHING, *Secretary*.

The report below is not of the last, nor the next to the last meeting of the St. Louis Dental Society; but it has not been in print, and we find in it thoughts worthy of preservation, therefore we are glad to insert it, believing it will do good.—ED. JOURNAL.

## REGULAR MEETING OF THE ST. LOUIS DENTAL SOCIETY.

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MEETING called to order by the President.

DR. MORRISON introduced the subject of cleaning teeth. Did not think it necessary to speak of the different varieties of tartar, as all were familiar with the different classes found in the mouth. He considered the brown the most difficult to remove, especially from the lingual side of the lower incisors and buccal surfaces of the molars.

He removes the tartar until the tooth has a greasy feeling when the instrument is passed over its surface; and this is his guide as to the cleanliness of the tooth.

After wedging teeth apart, he often finds tartar between them, where it can not be removed without this preparatory operation. He uses Rigg's Scalers; and another one, thin, like a watch spring, which is used to pass between the teeth, and also to remove the tartar from beneath the gum. He thought the Riggs Scalers were awkward, and not easily manipulated. He does not use acids to remove the tartar, and does not think that they would dissolve the tartar sufficiently rapid to be available for its removal. He regards the removal of tartar as a work of art, requiring patience and care. He brushes the patients' teeth himself, in order to teach them the use of the tooth-brush, more particularly the young patients.

Advises the use of a brush medium in stiffness, having four rows, and being one and one-half inches in length of brush part. He does not often see those who brush their teeth too much, thereby doing injury. The doctor sometimes applies a little iodine (the tincture) to the gums after cleaning the teeth and injuring the gums in the operation. He uses rubber tubing to cause the gums to recede from the teeth, thereby bringing to view the hidden tartar—cuts a short section and passes it over the tooth and down to the neck. He does not clean many teeth, but has the



office girl do most of the work, she being able to spend time in the operation.

DR. PARK said that he thought the removal of tartar the most important and most difficult operation a dentist was called upon to perform.

He never could clean a set of teeth in a hurry, and do justice to the teeth. Always did the operation best where it was most needed, and took from four to five sittings, cleaning from five to six teeth at a sitting, and goes thoroughly from tooth to tooth, cleaning the first one so nicely that he is ashamed to quit a tooth until it is as well cleaned as the first one. He never used acids, but pumice stone and powder; uses No. F F F sewing silk to carry the powder between the teeth. Considers that he saves time by thoroughness.

DR. EAMES regards the removal of tartar as a very important operation, and said that it was now receiving a great deal of attention in connection with the so-called Riggs Disease. Tartar under the gums he found always hard, and the alveolar border often in an ulcerated condition. He uses a chisel, having an angle of about one-fourth, and three-thirty-seconds of an inch in width on the cutting surface, punches off the tartar, and follows clear to the alveolar border. He uses a thin instrument between the teeth, such as that used by Dr. Morrison. He can not clean all the teeth at one sitting, but must have from three to five. He sometimes uses a brush in cleaning teeth, and of late has been using the small brushes furnished with the dental engines, and finds them a great auxiliary in cleaning teeth. With these he can polish the teeth nicely and quickly. The Doctor does not use acids, but wished to know who first used aromatic sulphuric acid in cleaning teeth.

DR. PARK had seen it used thirteen years ago, by Dr. Van-emon, he using it with pumice.

DR. MORRISON thought that Dr. Hunter had used it at an early date.

DR. NEWBY uses the same instruments as Dr. Eames. He does not use a brush, and does not use acids in removing tartar from the teeth. He said that many tooth powders sold by druggists contained acids, which make the teeth white, but did them injury.

JOHN G. HARPER, Rec. Secretary.

## Editor's Specials.

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"Write the Vision and make it plain."

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### PREDISPOSING CAUSES OF DENTAL CARIES.

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(Written for the Ohio State Dental Society.)

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THE discussion of this subject here is not intended to be very systematic, nor very minute, and certainly not exhaustive. It would be cruel to say all that can be said on it, even if we were competent to do it.

The predisposing and exciting, or immediate causes of the decay of the teeth are often discussed miscellaneously, by both writers and speakers. How often at society meetings, when a member is discussing exciting causes, let him hold to the chemical, or the germ theory, or both, another member rises to remark that he thinks the eminent brother who has just taken his seat holds views on the subject entirely too restricted, that he believes a crack in the enamel, as well as eating sour fruits, cause decay, and the medicines prescribed in protracted fevers often have similar effects. The first speaker, of course, agrees with him, and thinks it not worth while to remind him that he had tried to confine his remarks to *exciting* causes, while those referred to by his critic he would rank as predisposing. So, feeling that silence gives consent, the critic goes home delighted at his polemic success in vanquishing the renowned Professor Blank, so eminent in the profession, the author of a textbook, etc.; and when his patron, the Hon. Felix Philander, brings his family to the critic's office, and says, "Doctor, my children's teeth are giving way very fast; what is the cause of decay in the teeth?" our Doctor Critic is delighted, for it enables him to say, "That reminds me of an incident at our State Society last week. That subject was under discussion, and the renowned Prof. Blank gave his opinion that decay was caused by chemical agents, their action being followed up by the voracity of microscopic germs, and thus he went on in his learned style till he thought he had enlightened

us all. I got the floor and modestly (?) reminded the members that decay is very often caused by cracks in the enamel, sour grapes, and the like; and you ought to have seen how the Professor subsided. He hadn't a word to say. Now, don't permit your children to crack the enamel by eating parched corn, cut down your gooseberry bushes, and, if your children will eat apples, restrict them to sweet ones, and their teeth will last a lifetime."

This picture is taken from life, and is not much exaggerated. We use it feeling that the distinction in the nature and character of the causes of decay will be remembered better than would the mere definitions.

Predisposing causes of decay may be constitutional, or they may be local. They may be innate or acquired; general, or special.

As a general rule a good constitution is essential to the development of good teeth. This has many exceptions, however, as many, perhaps, as the theory that a strong, robust physique is essential to strong mental effort. "A sound mind in a sound body" is a thing much to be desired; and while, in a certain sense, we have no sound bodies, it must be admitted that very often we find the strongest and best mental efforts coming from bodies anything but sound. We see the highest qualities of mental manifestations from parties whose bodies seem as if not strong enough to hold a mind. So we see persons with feeble constitutions, persons who have never been strong, often blessed with most excellent teeth.

We have before used the different styles of horses usually placed on exhibition, to illustrate the principle here involved. The general purpose horse is by all odds the best, provided we are to be confined to the use of a single class; but a horse almost worthless, in comparison, may excel him in speed, while another having great capacity for the development of bone and fibrous tissue, will draw loads with ease that the general purpose competitor can not shake.

A child may be delicate, having defective respiration so that its albumen is not readily changed to fibrine, and in consequence, it will grow up with decided lack of muscular power, while its capacity to assimilate phosphorized nutriment may be greatly above the average, and the result may be great development of

the brain and nervous system, and thus the individual may far surpass, in mental power, his more robust comrades.

On the same principle, though not of vigorous constitution, an individual may readily digest and assimilate the materials necessary to the formation of bony textures, and so he may have teeth every way better than a more robust comrade whose constitution does not readily appropriate calcium, phosphorus, and other substances concerned in the formation of the teeth.

Still, notwithstanding the many exceptions, it is safe to put down a defective constitution as a predisposing cause of dental caries.

It is probably true, as above argued, that all diseases tend to weaken the dental organs, and thus are predisposing causes of decay; but some diseases are much more active in this direction than others. The most virulent are the *eruptive fevers*, such as typhus, typhoid, and scarlet fevers, measles, small-pox, erysipelas, etc. Of course, these vary in virulence; and, other things being equal, the most virulent are the hardest on the teeth, and therefore give the strongest predisposition to decay. Their relative durations, too, have something to do in determining the extent and degree of their mischievous effects on the teeth. Scarlatina is probably as injurious as typhoid fever for the time it lasts; but as the scarlatina patient is usually convalescent before the typhoid case has reached its worst stage, the latter is apt to do more harm than the former. And this general principle applies throughout the list.

These fevers, and perhaps all diseases, predispose to decay in two ways. Weakening the entire constitution, they correspondingly impair the vitality of the teeth, and thus they have less power to resist the encroachments of the exciting causes of decay. And further, they deprave the secretions of the salivary glands and the oral cavity, rendering them liable to such decomposition as will result in the formation of exciting causes. This is well illustrated when ammoniacal compounds are found within, or excreted into the oral cavity, when by the oxidation of the ammonia, nitric acid is formed, corroding the teeth, and directly causing white decay.

In the remarks above, we have intended to convey the idea that these and kindred diseases, act as predisposing causes of decay even in adult life. All should bear in mind that our bodies



are constantly being taken down and rebuilt, and that, therefore, anything which increases the taking-down process without, at the same time, correspondingly increasing the process of repair, is a source of weakness, rendering the organs thus weakened an easier prey to morbid processes. But how much more these influence the development, the health of the various organs and tissues, when they occur in childhood, while the constitution is in the process of formation, the reader can judge.

A decided predisposition to decay may be innate—may be born with the child. That the condition of the teeth is influenced by heredity no observing dentist can doubt. We have seen a family in which its female members, for four generations, lacked the left upper lateral incisor. Other cases as striking have been observed. Sometimes when one parent has good teeth, and good dental organs pertain to the family history, and the case with the other parent is just the reverse, we see the children, not usually having dental organs of an average between the two parents, but some of them copying one parent and some the other. It follows, then, that the dentist needs the dental history of the families of both parents to enable him to arrive at a correct diagnosis and prognosis, in any case that presents. He may know that one or both parents had bad teeth, but this may have resulted from accident, while the family history on both sides may show good teeth. In such cases he will be justified in making a favorable prognosis notwithstanding the condition of the parents' teeth.

We find two classes of constitutional conditions predisposing to decay,—one a condition that gives a feeble or defective development of the dental organs, and the other, though the teeth may be excellent in form and texture, we find fails to give the teeth due support and protection. The constitution of the parents, and especially that of the mother, may be unable to impart due vigor, or proper materials in requisite quantities, to the process of developing the teeth. For some cause, hereditary or otherwise, there may be a lack of limesalts in the system, or a lack of physiological ability to appropriate them, and build them in properly with the organic matter of the teeth. A building not well put up is easily taken down. Teeth of defective structure are easily destroyed.

The other condition referred to may show the very best

formed teeth, while the alveolar processes, periosteum and mucous membrane may be defective. A defective periosteum cannot give efficient nutrition; deficient development of the alveoli results in inefficient support; while, if anything is wrong with the mucous membrane, we may have to contend with defective, or depraved secretions.

Want of exercise predisposes to decay, though perhaps this is not its worst result, as loosening in the sockets, and absorption or destruction of the alveoli, are almost sure to follow prolonged idleness of any of the teeth. One of the early dentists of Philadelphia has told us that Stephen Girard occasionally laid in a barrel of sailors' biscuit—"hard-tack"—with the explanatory remark that he found his teeth like boys. When they had nothing to do, they fell into loose habits. But it can not fail to be observed by all giving close attention, that such neglected teeth take on decay very readily. How often we see a patient who has used but one side of his mouth in chewing have all sound teeth on the side used, while a number of carious cavities are found on the other side!

But it is probable that, after all, neglect—want of cleanliness—is the leading predisposing cause of dental decay. We have seen patients so indifferent in regard to the condition of their mouths that ordinary advice failed to induce them to do better. We have had to talk coarsely—almost harshly, to such, to get them to give their mouths the necessary attention. If such ones expressed surprise at the rapid decay of their teeth, we have told them if they treated their hands as they were treating their mouths, their fingernails would rot off. Yet after all that has been said, this neglect still prevails. If a drop of fresh cream adheres to the lips of a young lady, she will not think of giving or taking a lover's kiss till it has been carefully removed by washing. But she will besmear her mouth internally with "bacon and gravy," green peas and griddle-cakes, molasses and jellies, soups and salads, and leave their debris to ferment and putrefy, so that the kiss of betrothal on her lips is like painting the outside of a sepulcher while within it is "full of dead men's bones and all uncleanness." And her own lips constantly kiss all this uncleanness.

This far we have spoken of the predisposing causes of dental decay in a general way. Before proceeding to discuss preventive

and remedial measures, it may be well to be more specific, and say something about the several predispositions to different varieties of decay. A sane person can not examine carefully a specimen of black decay, and another of white, and believe them to be caused by the same exciting agent, acting under like circumstances. And it is not easy to believe that the predisposing causes can be the same throughout.

Let us think of black decay and predispositions thereto by way of illustrating what is meant. In some patients, with sluggish constitutions, whose skins seem as if oily, with fetid perspiration, whose breaths give off an offensive odor, showing the presence of sulphuretted hydrogen, we have found quite a tendency to the black variety of caries.

On the other hand, when we find a decidedly scorbutic aspect, with soluble chlorides abounding in the buccal fluids, the tendency or predisposition is not to black decay, but to the most common of all the varieties of caries, which we have often referred to as caused by hydrochloric acid as its exciting agent. This variety is diagnosed by the fact that the organic, or gelatinous portion of the dentine remains undissolved in the carious cavity, while the limesalts are dissolved out. As no one who looks at this variety can, for a moment, believe that its exciting agent is the same that is active in causing white or black decay, so none can be so deluded as to believe that the predisposing causes of this variety are identical with those predisposing to the other varieties. It is true that a certain class of predisposing causes may tend toward any of the varieties of caries, as, for example, those which overcome the vital resisting force of the constitution. But between such and the exciting causes, there is room for another class of predisposing agencies, special and direct in their nature and action.

The condition often spoken of as "chemical abrasion," but better called corrosion, has various predisposing causes, the most prominent being a gouty or rheumatic diathesis. This is often seen in men of middle age, and in those still older. The practice of tobacco-chewing also strongly predisposes to this condition.

If our experiments and researches, made mostly between the autumn of 1855 and the spring of 1864, taught, as we verily believe they did, the truthfulness of our views as to the exciting causes of dental caries, first published in the *Dental Register*,

afterward in WATT's CHEMICAL ESSAYS, and still later as an appendix to *Taft's Operative Dentistry*, we can learn much as to the prophylactic treatment of the predisposing conditions, by considering what circumstances predispose to the formation of the specific acid active, as the exciting cause, in each variety of caries. Further light would be thrown on the teachings of these experiments by a study of the paper read by the writer at the meeting of the Ohio State Society, in December, 1882, and the one read at the meeting of the Indiana State Society, in June, 1883. It is gratifying to the writer to learn that Dr. Miller, of Berlin, is repeating, substantially, these experiments, and that, as far as he has progressed, as a matter of course, they give the same teachings. And really but for the unfortunate fire of 1866, we would now be greatly enjoying the placing, side by side, of our own experiments of the olden time and his of later date, whose teachings have the advantage of improved apparatus, and increased scientific light. The publication of the details of our experiments were postponed by the civil war, and forever prevented by the relentless fire. And this was all the more unfortunate as the war left us wholly unable to repeat them. Hence we have had to rest content with our own report of their teachings.

But how are we to overcome or thwart the deleterious effects of predisposing causes of decay? In a general expression, covering all cases, we might say: Invigorate and balance the system—the general constitution. Many tissues, if not organs, are weak from simple starvation. These must be fed. But feeding is something more than placing provender in the trough. And, besides, the horse may eat the provender and still not be fed. In a music-book, made by a pen—a book which had belonged to my mother's great-grandmother—the words set to good old *Coleshill*, minor key, were as follows:—

“A man may lead a living ox,  
All to a running well;  
But for to drink, yea, I do think,  
No man can him compel.”

Food must be assimilated, and drink must be appropriated, if hunger and thirst are to be allayed by their use.

But let it be ever borne in mind that the vital functions can create nothing: They can not build up any tissue unless they



have the necessary materials from which to build. Assimilation can not occur where there is nothing to assimilate. Yet the materials for building up the constitution may be present in abundance, while the vital forces may not be able to appropriate them. But if the assimilative functions are weakened, they may be able to properly supply the system, provided the needed nutritious elements or materials are abundantly furnished, and thus their action in an effort to build up, or restore the balance of the constitution, may equal that of the stronger functions which have to gather from an inadequate supply. The children of Jacob, "when in the land of Ham," did not complain of having to make bricks with stubble so much as they objected to the demand of the same tale as when an abundance of straw was furnished. The efforts to gather stubble sacrificed their time and exhausted their strength. And the same may occur with the nutritive functions. They may be overworked by having to build from deficient supplies of pabulum.

It has been claimed by many, perhaps by a decided majority, that the inorganic kingdom can do nothing toward the support of animal life, except by passing through the vegetable. In other words, the claim is that organic matter, whether vegetable or animal, may nourish animal life, but that this can derive no support at all from inorganic matter. Those who hold this doctrine, however, prescribe iron for the pale-faced girls as freely as do others. It is sometimes amusing to witness the assumptions of science. In our younger years, the physiologists were diligently teaching that lost nerve substance can not be replaced, while the surgeons were cutting out sections of nerve-trunks to relieve neuralgia, and finding the relief only temporary, because, by the growth of new nerve tissue, the trunk was re-united. So we are not surprised at the contradiction here in claiming that the system can not appropriate inorganic matter while pouring into it *metallic* iron precipitated by hydrogen.

Perhaps it was our friend, Prof. Cravens, who once suggested covering an exposed pulp with lacto-phosphate of lime, believing that its vessels would take up the phosphate, and cover the exposure with a layer of secondary dentine. This always seemed to us too much like the Irishman's idea of feeding the horse with corn in the ear.

We have, however, given the lime phosphates, with the food,

for the purpose of building up the constitution, in cases where we thought there was a deficiency of lime salts; and we think we have seen good results from the practice. We will refer to a case with which Prof. J. Taft was familiar, and in the treatment of which he co-operated.

Mrs. McC., a pale, delicate woman, a little under thirty years of age, was pregnant with her third child. Her two children had suffered from difficult dentition, and had very defective teeth. She asked if she could do anything to prevent such consequences. She was about three months advanced. We advised the bone-phosphate, and she used it daily, with her food, during gestation and lactation. This third child suffered none from dentition; his teeth, both temporary and permanent, were good, and remained so till he was quite advanced in manhood, since which we have not met him. Unfortunately, as we think, the woman was persuaded that a change of sex was the true explanation of the difference. Her first and second were girls. But afterward she had two boys, and with one she used none of the phosphate, and with the other but a little of it. The worst teeth in the family belonged to the second boy; and those of the third one were not at all good. It may be worth while to add that, when using the phosphate, the mother became rosy-lipped and vigorous, and had a short and easy labor, though the babe weighed over twelve pounds, while she weighed less than one hundred.

We could report a great variety of similar cases, and we are aware of none not benefitted by a diligent use of the phosphate. The report of the above case suggests a means of overcoming one of the hereditary predispositions to decay.

In reference to some of the special predisposing causes of decay, the mere naming of them suggests the remedial measures. For example, when inattention to cleansing the teeth and mouth is mentioned, regular and diligent washing is suggested; and it is almost universally conceded that both the brush and the toothpick are necessary to effective work in this direction. Many use the brush with something like decent regularity, while, for want of the pick, fragments of beefsteak, fried ham, roast turkey, mutton and company, remain tightly wedged between the teeth, there to putrefy and develop corrosive agents, while the plasterer's art is successfully portrayed by the bread and potatoes smoothly filling the spaces between and around the necks of the teeth.

Whenever a tendency toward scorbutic disease shows itself in any patient, he should be restricted to fresh food, vegetables, acid fruits, pickles, etc.; and if he eats flesh meats, the quantity of salt used with them should be limited. "Good old ham" should be avoided. By a little care, when scorbutic symptoms appear, the most common variety of caries may be prevented in great measure, or, if it has already made its appearance, much can be done in this way to arrest its progress, and thus bring all the teeth to a condition in which the decay will be arrested by filling. It is often a reproach to our profession to see finely finished, perhaps contour, gold fillings, in a number of teeth in a patient's mouth, where the tendency to decay is so great that the margins of the cavities soon decay around the fillings. I have heard operators, in such cases, explain to the patients that they had received the very best treatment that dentistry affords, and call attention to the fact that the fillings were still tight. Believing the statement, the patient concludes that filling teeth is an unreliable operation, and ever afterward he allows caries to carry on its depredations unmolested by any efforts of the dentist. A knowledge of pathology and chemistry sufficient to enable him to recognize the condition of the mouth, and to restore it to its normal state, was the great want of the operator in the case just described. Yet far too many dentists think their duty is done when good fillings are nicely inserted, whereas it often happens that their most important duty to the patient, is to place his mouth in a condition fit to have teeth filled in it.

But our paper is becoming quite too long. Omitting now the general predisposing causes of decay, and their preventive or curative treatment—we mean those predisposing causes which tend to caries, regardless of the kind, allow us, in conclusion, to briefly refer to the individual varieties of caries, their special predisposing causes, and how to ward them off.

As no known chemical agent is capable of producing the phenomena of black decay, pure and simple, except sulphuric acid, and as it must be formed by chemical action within the mouth, or else be secreted or excreted therein, if we are fighting predispositions to black decay, it is well to keep our eye on it. It is almost certain that its presence in the mouth, otherwise than as an official prescription, is due to its formation by the action of oxygen on sulphuretted hydrogen. By this oxidation, water and



sulphuric acid are formed, and as these have a very strong affinity for each other, this mutual affinity is called, by Liebig and others, a disposing circumstance, aiding the oxidation producing them. This disposing incident is like the water in the "tail-race," which gives no aid in turning the wheel, except that it gets out of the way of the water above which does the business. It follows, on this principle, that if we would cut off the tendency to black decay, we would avoid immoderate indulgence in foods rich in sulphur.

In like manner we would, in fighting a tendency to white decay, avoid the excessive use of nitrogenous foods, as when not properly assimilated, they sometimes yield ammonia. And as Liebig and others tell us this alkali, in the presence of free oxygen, is always oxidized into water and nitric acid, its presence is not desirable, as before its oxidation it precipitates tartar, by taking the free carbonic acid from the fluids of the oral cavity, rendering them unable longer to hold the lime salts in solution; and after its oxidation, in the shape of nitric acid, it is the primary, specific exciting agent of white decay.

On the same principle, if warding off the gelatinous variety, we would avoid such foods and such habits as are likely to give an excess of hydrochloric acid, or other soluble chlorides in the secretions, especially in those of the buccal cavity. A too free indulgence in the use of common salt, as already spoken of, must be condemned, while fresh vegetables, etc., are to be liberally used.

When the tendency is to corrosion, as in the rheumatic or the gouty diathesis, the proper treatment for the diathesis affords the best means of arresting the local trouble. Many recommend the internal administration of colchicum, sometimes in combination with iodide of potassium. Many rely on citric acid, as in the juice of the lemon. A consultation with a sensible physician will be of advantage, to both the dentist and patient, in such cases. It is worthy of note that in at least two of the varieties of dental caries, the predisposing conditions are best combated by acids. They are emphatically called for when white decay is threatened, and either "vegetable or mineral" acids will answer. They are called for also in the predispositions to the gelatinous, or most common variety of decay; and here we generally prefer the vegetable acids, or those vegetables which, by fermentation, yield



lactic acid. It is here that saur-kraut comes in so beneficially, though it is not to be ruled out in the other variety. He was a thoughtful dutchman who had ten barrels of it stored away for sickness.

Now if our friends and former pupils will read this paper, then the one on *Ammonia*, read at a meeting of the Ohio State Society sometime ago, then our "Topical Remedies," in *Chemical Essays*, next our "Thoughts on Caries," as in *Taft's Operative Dentistry*, after that the paper we read last December, before the State Society, at Columbus, and finally, the paper we read at Indianapolis last June, before the Indiana State Society, they will have the most important of our teachings. Or, if the papers are all before them, this one might be read, as the fourth in order, to better advantage. The teaching is dry; but we regard it as mainly sound. This paper would be better understood in such connection.

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## PERMEATION OF TISSUES BY MEDICINAL AGENTS.

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MUCH valuable time is wasted sometimes in our dental societies, by want of accuracy in the use of terms, and by hypereriticism of the terms used. A venerable member will speak of the absorption of an escharotic, and the smart young man of the society will remind the members that the "esteemed brother" shows that he "knows nothing about the subject;" that absorption is a physiological process, and that it cannot take place in devitalized tissue. Not long ago one of our prominent teachers spoke of the possibility of arsenious acid being carried beyond the parts desired, when applied to devitalize a pulp. The smart man was there, and he reminded the society of the great mistake in the professor's teaching. The surface of the pulp, said he, is at once devitalized, and dead tissues cannot absorb.

Now, in a certain strained sense, absorption is a physiological process, but ordinarily it is otherwise. One of Webster's definitions of absorb is "to take up \* \* \* as when charcoal absorbs gases;" while another is, "to drink in; to suck up; to imbibe, as a sponge," etc. Now where is the physiology here? Sometimes an agent penetrates dead tissues more readily than if they were alive, as sometimes capillary attraction excels what is known as physiological absorption.

Sometimes the action of a medicinal agent is purely chemical, and the result of its affinity for the tissue or some constituent, is an insoluble compound. That is, the resulting compound is not soluble in an excess of the agent itself, nor in the fluids of the tissues. In such cases the agent shuts itself out from anything like deep-seated action.

This may be better understood if we compare the action of nitrate of silver on blood, or other protein substances, with that of tannin on the same tissues. The nitrate was formerly regarded as a styptic, and used accordingly, but with very unsatisfactory results in extreme cases. It combines promptly with the albumen and fibrine of the blood, forming a clot, but the albumen of the blood is able to dissolve its way through the clot, and the hemorrhage is resumed. An excess of nitrate also dissolves the original clot, so that the surgeon is sometimes surprised that he does not see good results from a second application.

On the other hand, tannin forms a clot by combining with the albumen and fibrine, which is not soluble in any constituent of the blood, nor in an excess of its own solution in water. Tannin is, therefore, a true styptic. And were it not for the insolubility of this combination, it is probable that tannin would be found one of our most violent poisons. If directly within the circulation, it would prove fatal in smaller doses than would arsenious acid. And when applied to living protein tissues it almost instantaneously destroys the vitality of the surface which it touches, but it penetrates to no considerable depth, not because devitalized tissues cannot absorb, but on account of the insolubility of the compound formed by its union with the albumen of the superficial tissue. Liquidity is essential to absorption, or at any rate the solid state is unfavorable to it. A portion of albuminous tissue combined with tannin may be laid on an abraded surface of living tissue without harm resulting, but if a similar portion, in combination with arsenious acid, is applied to a like abrasion, arsenical poisoning results. And this is because the fluids of the abrasion are capable of dissolving the arsenite of albumen, or the abraded tissues are capable of taking the arsenious acid from the compound.

But to go back to the application of arsenic to the pulp for the purpose of destroying its vitality, and the question has been raised as to whether the poison penetrates the pulp substance, or

whether it remains at the point of original contact. An experienced teacher in our profession maintains that the tissue is not permeated by the drug; and his enthusiasm, or something else, has carried many of his pupils to the same position. We have heard, or read, of one-tenth of a grain of arsenious acid destroying the vitality of twenty (?) pulps by successive applications and that enough of the poison was still left to kill a large frog, and that careful chemical analysis could find no arsenic in the frog, except at the point of application. Something of this kind has been stated and restated for nearly twenty years, till the doctrine has become widely disseminated in our profession. A few of us tried to stem the current of erroneous teaching, as we regarded it, but the original statement, or at least an early statement, set forth that the professors of chemistry in the two dental colleges in an eastern city had tested various portions of the frog, as well as the apices of the pulps devitalized, and had found no arsenic at all, except at the point of original application. Of course, when it was believed that the teacher of non-absorption doctrine had these eminent men to back him, those who opposed, labored against great odds. And, unfortunately, the long silence of these men in reference to the subject, helped to fix the error in the minds of those not capable of experimenting for themselves, and those too busy to spare the time for research, even though capable.

This long, mysterious silence was at last broken, but, unless we have overlooked the fact, not till the meeting of the American Dental Association in 1882, at Cincinnati. At that meeting, in the Highland House, a member referred in detail to the one-tenth grain experiments of Prof. —, ending with the analysis of the frog, when the venerable and gentle Professor T. L. Buckingham, as if he could hold no longer, arose with the statement that he knew something of that frog, being one of the parties alluded to as having analyzed portions of it. Thus far, he said, the account was correct, but further it was all wrong. He would not go into details, but would say that in testing parts near to and remote from the point of application, they found arsenic enough to prove that all parts of the frog had been permeated by it. He stated also that he had asked Prof. — how he had happened to make the statement involving him and the other professor of chemistry in a position directly opposite to the facts, and Prof. — told him he had repeated the experiments, with other patients and another

frog, and had made the analysis himself, with the results stated, and somehow the stories had got mixed.

But it was a mixture very unfortunate for the dental profession, as error out-travels truth with an even start; and this one having a circulation of nearly a score of years before it was publicly contradicted, will probably do mischief for a generation yet. And very many in the profession will fail to give Prof. Buckingham's positive testimony its due weight in opposition to Prof. —'s negative evidence. The latter proves nothing, except that Prof. — *didn't find* any arsenic, except at the point of application. It, by no means, proves that it *was not there*; nor does it prove that it might not have been found by a more expert analytical chemist. But, as Professor Buckingham found it, even in remote parts of the frog, it was *positively* there.

A little matter that is now history illustrates how hard it is to eradicate an error from the minds of the profession, after it has gotten a lodgment therein. The writer was at a meeting of a State Society, and an active member, who had, in all probability, read a report of Prof. Buckingham's correction of the frog story, repeated it accurately, frog and all, to confirm a position that he had just taken, viz.: that arsenious acid is not absorbed by pulp tissue, or similar substances, emphatically stating that the acid, after its application to the pulp, could be found only at the point of original application. The writer informed the Society (when requested to give his views), that he had often detected the acid in the apical portion of the pulp—that at one time it had been his duty to teach the truth in reference to the matter in dispute, and therefore he had multiplied experiments on the subject, and that they uniformly testified to its absorption, or permeation. The young member expressed to the Society his opinion that we had neglected to remove the portion to which the arsenic had been applied, before our analysis of the pulps. Of course it was too late in the afternoon of our professional day to allow time to convince the young brother that we had ever been capable of conducting such simple experiments, and we left him enjoying his full belief in our incompetency. But we were surprised to find an active member who reads, still holding on to the frog story, after Professor Buckingham had so effectually disposed of it. We suggested to the Society the method to which we resorted to obtain portions of devitalized pulps for examination, so as to be absolutely sure we were



not testing the portions to which the drug had been applied. We did this for the sake of any young members who might wish to investigate for themselves. Our plan was to wipe off the tooth to a state of thorough external dryness, and then, with a watch-spring saw, to cut off the root and split it to get the enclosed portion of the pulp, leaving the portion touched by the original application entirely out of the experiment.

We suppose our brethren have no idea what narrow scholarship they display by insisting on the non-absorption of arsenious acid. In *post mortem* investigations, where poisoning by this agent is suspected, the expert is almost as careful to save portions of the liver, as he is to save the stomach for examination. And finding the poison in the substance of the liver is demonstration that it is absorbed—at least that it permeates and reaches portions of tissues to which it has not been applied.

We have never before written an editorial article with such feelings of sadness. We have tried hard to not write it, but it will “not down.” We have to write of some of our best earthly friends, some of them here, and some of them yonder. Some things written here do not seem kind, but truth is truth, and facts known by us belong to our fellowmen. No individual is as important as the truth. We should not try to bar its wheels of progress, lest we get crushed. The journalist who withholds facts essential to the welfare of society, or to professional progress, is untrue to his trust—is a partaker in the sin of disseminating falsehood. In all our more than a score of years in editorial labor, but one short paragraph was written while feeling unkindly toward any one, and that we tried to suppress, but our co-editor would keep it in, taking advantage of our absence.

We sincerely hope this article will do good. It is astonishing how widely diffused among dentists is the error here discussed, and we are thereby made the laughing stock to physicians.

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### IS BEER NUTRITIOUS?

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THE opinion of Liebig is often quoted to show that it contains very little nutritious material. The *Progrès Médical*, as quoted by the *Medical Record*, tells us that M. Quentin, the Director of the Assistance Publique, has just issued to the directors of the Paris hospitals instructions in which he tells them that the con-

sumption of beer in the hospitals has greatly increased; and further, "That this abuse, as he terms it, he can no longer permit, for beer he declares to be neither a food nor a medicinal agent, and therefore it must, from this date, cease to be furnished as one of the current articles of diet."

This may be a radical change, but American experience demonstrates that beer is not an essential in hospital supplies, as is remarked by the *Record*. We are told, too, that the hospital physicians have "signed a protest against the withdrawal of the beer." This may be because they are personally interested; and the case reminds us of an incident in our own practice. A lady came for an operation, and wished to take nitrous oxide. The family physician, a drunken dandy, had come with her. She took the gas nicely, without change of pulse, and the M. D. sprang to her side, exclaiming, "Where's your brandy, doctor? Whisky! Brandy!! Quick!! Her pulse is gone!" etc. We pushed him into a seat and peremptorily ordered him to keep quiet. In a few seconds the patient became conscious, and was calm and comfortable. When about leaving the doctor got his eyes on a small bottle of whisky, and remarked, "Ah, here's your stimulant. As Mrs. ——— didn't take any, you can spare me a little," and he took a gill of it without sweetening. His urgent calls for it were explained.

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### BOILED LITERATURE.

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SOME men are nothing if not practical. A Buffalo paper, in noticing the late meeting of the American Dental Association, tells us that "Dr. Crouse of Chicago stated that there were not more than fifteen thousand practicing dentists in the United States, and that he was in favor of weeding out many of the dental journals; that one good journal containing facts and a condensed mass of literature boiled down, was just what is wanted."

The idea is worthy of consideration: but is it probable that the average mental stomach of the dental profession can digest the double distilled, concentrated, rectified quintessence of boiled-down literature, condensed as proposed? And would there not be danger that the boiler, in the shape of "that one good journal," might burst? And besides, we have a little doubt about our

ability to edit properly such a "good journal;" and we fear Dr. C. is so closely engaged in other important duties that his services would not be obtainable. Of course we will be politely invited to accept the place, as the *OHIO JOURNAL* will evidently be the one left after weeding out the others. In the mean time, you can't do better than take our *JOURNAL* now, and the weeding-out process will not break your files.

But, seriously, if it be true that we have too many journals, it is doubtful if a satisfactory method of reducing their numbers can be devised. The quality of our periodicals is a more important consideration than their number. And if reduced to but one, with the understanding that others would not be started, is it evident that the one would be any better—any fuller of facts, or literature "boiled down"—than some now in existence? Secure in its loneliness, what would stimulate it to earnest efforts? Competition arouses to energy. More than one of our periodicals have been awakened to increased effort by the appearance of the *OHIO JOURNAL*. If a few more are started, perhaps it may awake from its lethargy. So, kind readers, help us with your pens.

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## THE STATES THAT REGULATE THE PRACTICE OF DENTISTRY.

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FROM the best information we are able to gather, and for which our principal thanks are due to Doctor Sillito, the following are the names of the States which have adopted laws to regulate the practice of dentistry, with the dates at which their original laws on the subject were adopted. Some have amended, and a few, if our memory is not treacherous, have almost remade them. It is well known, we believe, that Ohio led off in the movement, and we think it originated in the Cincinnati Dental Society, on motion of Dr. C. H. James. It was our good fortune to be present to hear the original motion discussed on its merits, at its first presentation. As alluded to by Prof. C. W. Wright, at a late meeting of the Mad River Valley Society, there was a disposition in other States, on the part of some, to sneer at the movement. But on witnessing the earnestness of the profession in Ohio, as well as their success in obtaining and executing the law, and especially on noticing that the quacks preferred the climates of

their States to that of Ohio, they began to think it would be well to follow the good example, till now we find fifteen States whose citizens are protected by law against the increase of dental empiricism. These fifteen are as follows: Ohio, 1868; Georgia, 1872; New Jersey, 1873; Pennsylvania, 1876; West Virginia, 1877; Kentucky, 1878; New York, 1879; Indiana, 1879; Alabama, 1881; Illinois, 1881; Iowa, 1882; Mississippi, 1882; Vermont, 1882; Missouri, 1883; Michigan, 1883.

We are further informed by our friend H. H. Way, D. D. S., of St. Thomas, that Ontario has had a law on the subject since 1868, with an organized Examining Board; and also, that an examination on the preliminary studies, and a pupilage of two and a half years, are required. We would thank Dr. Way for a copy of the law, printed or written.

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### ENERGETIC AND SUCCESSFUL TREATMENT.

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At a meeting of the Ontario Medical Association Dr. Burt exhibited a patient who had suffered from a severe attack of *traumatic tetanus*. The wound causing the disease was on the lower front part of the forearm. He practiced complete insulation of the forearm by a thorough dividing of the nerves supplying it. The patient made an excellent recovery.

We get the above account from the *Medical Record* of July 21st, 1883; and we feel quite interested in it from the fact that a case somewhat similar was treated by the same plan of insulation, and with complete success, in our own practice.

A spear-pointed drill belonging to a dental laboratory, was forced into the tip of the index finger by a sudden thrust. The drill penetrated the bone so deeply that a resort to the use of pliers was necessary to aid in withdrawing it. The accident occurred at 11 A. M. Water dressings were applied immediately, and in thirty minutes the pain had subsided. About 2 P. M. severe pains passed up from the finger and along the forearm; and by 3 o'clock the posterior muscles of the neck had contracted in tonic spasm, and by 4 the jaws were decidedly locked. The pain in the neck and jaws was excessive. A division of the nerve trunk above the wound was at once resorted to; and the head tipped



forward and the jaws relaxed so suddenly as to surprise all observers. All pain was gone, and to quiet the nervous shock, one-fourth of a grain of morphine was injected over the radial nerve about the middle of the forearm, it being known that the patient bore morphine well.

Not an unpleasant symptom followed.

Attention is called to these cases because dentists are more liable to small punctured wounds of the fingers and hands than are those in any other calling. This being so they should be well-posted in reference to treatment. Punctured wounds are far more dangerous in proportion to their appearance than others. They often look so trifling that they are neglected. They should always heal from the bottom outwards. It is very dangerous to allow them to close externally while there is still diseased textures beneath.

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### SPECTACULAR.

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Good eyes are to any desirable, but vastly important to the dentist. The young dentist often overtaxes his eyes, and suffers in body, mind and pocket, as a consequence. Too many put off getting spectacles, and suffer unnecessarily. Some have great difficulty in obtaining suitable glasses. As a general rule, those badly adapted to the eyes are worse than none. A neighbor of ours, whose eyes have always been a little peculiar, we believe, has lately been very lucky, by falling into the hands of our friend Capt. G. C. Canfield, who possesses the grace of perseverance as well as skill and judgment. He has fitted him with double glasses, lower half for reading, and upper half for looking at distant objects. The combination is, to us, a very curious one, but as it seems to be a perfect success, our ignorance of the science of optics is probably all the reason it seems curious. But to the facts. The upper glasses for distance, are double concave, No. 18, while the lower for reading, and other close work, are double convex No. 24.

We call attention to this to encourage others to persevere, and be suited, and not strain the eyes, as too many do, while working at the chair.

OUR LONG SPECIAL.

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THIS, as stated at its head, was written for the Ohio State Dental Society, out of gratitude for its many kindnesses to the writer. By a stretch of that charity which "endureth all things," it was hoped that it might be regarded as on the first subject in the program. Having so lately discussed the exciting causes of caries, the intention was to omit them entirely here. When but a few paragraphs had been written, our dear wife met with a frightful accident, resulting in bruises, concussions, dislocation and fracture, and the remainder of it was written beside her bed of anguish, where we were liable to constant care and frequent interruptions, and it is quite probable that the arrangement of sentences and paragraphs will show symptoms of being somewhat disjointed. We never before wrote when it was so difficult to concentrate the mind on the writing. We beg for charitable criticism, as to the language. As to the sentiments taught, let them "take luck." Grind them to powder if such is their desert.

Having but little hope of getting to our next meeting, we concluded to use the paper in the JOURNAL; and we hope our brethren will make this meeting the Society's best.

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PHENORESORCIN.

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WHAT'S in a name? "Nothing, yet something still," we are told. The above hard word is the name of a new antiseptic wash; and if the "bug theory" were the true one, its *modus operandi* would be easily understood. The sound of the strange name would frighten the bugs to death. But as the mischievous agents are generally supposed to be horticultural demons, this explanation will not answer.

The mixture is composed of sixty-seven per cent. of carbolic acid, and thirty-three per cent. of resorcin. The addition of ten per cent. of distilled water makes a fluid that can be diluted to any desired extent. Try it in your spittoons and tell us.

## Books and Pamphlets.

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"I leave you here a little book."—JOHN RODGERS.

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HINTS TO MOTHERS, OR HEALTH FROM A DENTAL STANDPOINT,  
by J. M. HURTT. Ransom & Randolph, 1883.

This is a beautiful little book, neatly printed, on good paper, with a table of contents and index. It has thirty-eight pages, of very readable matter, under such headings as Arrangement of the Teeth, Care of the First Set, Care of the Second Set, Exercise, Tartar, Hemorrhage, Irregular Teeth, etc., up to thirty odd divisions, the last ones being Societies, American Dentists Abroad, Future of Dentistry, Appendix, this last containing the Code of Ethics. Can't tell you the price, nor how to get it, but as you must have it, write to the author or the publishers.

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## Our Aftermath.

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BRIDGEWORK.

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BY DR. STEWART J. SPENCE, SAN FRANCISCO.

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[Written for the Ohio Journal.]

IN the *Dental Cosmos* of June, 1883, Dr. James E. Dexter describes several modes of bridgework, the radical defect of which he regards as consisting in their uncleanness, caused by their being permanently attached in the mouth; and in the July issue of the same journal he offers us a "new appliance," which is held by caps of gold over natural teeth, but loosely, so that it may be removed for cleaning. Then a note of alarm is sounded across the ocean by Mr. Thomas Fletcher, who tells us in the September number of the *Cosmos* that such plates had been tried in England and condemned twenty years ago, because the teeth under the caps would "become black and comparatively soft."

From reading these articles, and that of Dr. James E. Low, in the OHIO STATE JOURNAL, I have been set to pondering on the subject of bridgework, and have felt regret that such a desirable process should be spoiled by a few simple difficulties, and wondering if I could not invent some process to remedy them.

An idea struck me—I do not know that it is of any value, and I confess that I have not made a single experiment upon it yet—but it seems feasible, and I offer it to the profession for what it is worth. I have no time to go into extended trials of it, especially as years of actual use in the mouth would be required to demonstrate its utility, and before that time the patent fiend might seize upon it.

The objection to permanent bridgework is that it cannot be readily removed for cleansing, repairs, etc. The objection to bridgework retained by loose caps over natural teeth is, that the teeth, being bathed in fluids which become vitiated, degenerate. But there is no objection to a gold crown permanently affixed to a root. Now, why might not the root be first crowned with an ordinary gold crown, and then a second gold cap placed over the former, so as to be removable, and the artificial dental bridge soldered to this latter cap?

If a root remained in front, and it was thought objectionable to place a gold crown on it, it might be fitted with a gold tube in its canal, and a peg of gold fitted to the tube, in the manner illustrated in Dr. Jos. Richardson's *Mechanical Dentistry*, chap. viii. The peg may be split to aid its retention, as recommended by Dr. Dwinelle.

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#### A MAN'S A MAN FOR A' THAT.

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THE average weight of an adult man is 140 pounds, 6 ounces. The average weight of a skeleton is about 14 pounds. Number of bones, 240. The skeleton measures 1 inch less than the living man. The average weight of the brain of a man is 3 pounds, 8 ounces; of a woman, 2 pounds, 11 ounces. The brain of a man exceeds twice that of any other animal. The average height of an Englishman is 5 feet, 9 inches; of a Belgian, 5 feet 6 $\frac{3}{4}$  inches. The average weight of an Englishman is 150 pounds; of a Frenchman, 136 pounds; a Belgian, 130 pounds. The average number of teeth is 32.



A man breathes about 18 pints of air in a minute, or upwards of 7 hogsheads in a day. A man gives off 4.08 per cent. carbonic gas of the air he respires; respire 19.666 cubic feet of carbonic acid gas in 24 hours, equal to 125 cubic inches common air. A man annually contributes to vegetation 124 pounds of carbon. The average of the pulse in infancy is 120 per minute; in manhood, 80; at 60 years, 60. The pulse of females is more frequent than that of males.—*Exchange.*

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### WHAT APPLES ARE MADE OF.

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FOUR thousand pounds of apples when reduced to ashes, will weigh about 100 pounds, which contain 13 pounds of potash, twenty-five pounds of soda, and a little lime, iron and magnesia. But the ash of the wood of an apple tree contains but nineteen per cent. of potash against thirty-eight per cent. in the fruit, and only a trace of soda against twenty-five per cent. in the fruit. On the other hand, while the fruit contains but five per cent. of lime, the ash of the wood shows sixty-five per cent. The fruit also demands fifteen per cent. of phosphorous and the wood but five per cent. These facts suggest that if we have a young orchard in which we want growth of wood, the treatment should be very different from that in an old one where fruit is the object.

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### TO TERMINATE THE CHLOROFORM NARCOSIS.

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A PECULIAR device is mentioned by Schirmer in the February number of the *Centralblatt f. Augenheilkunde*. He claims to have used it in his clinic for many years, and often succeeded in producing inspiratory movements when other means failed. He also employed it to induce rapid recovery, for instance in strabismus operations, in order to test the result. The method consists in irritating the nasal mucous membrane. It has long been known, at least to physiologists, that the fifth nerve retains its sensibility longer than any other part in the narcosis, and that reflexes may be induced through this nerve when other irritations fail. Schirmer uses simply a rolled piece of paper, which he turns in the nose. In dangerous cases he dips the paper into ammonia.—*Chicago Medical Review.*

### SOLDERING FLUID.

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SOLDERING fluid for any purpose where tinnerns' solder is to be used, is made as follows: Take an ounce of muriatic acid, put it in a wide mouth bottle and put into it zinc clippings or zinc fillings until all ebullitions cease. Pour the clear liquid in a bottle and it is ready for use. The solder will flow very readily on any article to be soldered when moistened with this fluid, provided it is well cleaned of all grease. In making the fluid the operation should be conducted in the open air, as there will be a strong odor of hydrogen gas given off by the combination of the zinc with the muriatic acid, which is apt to induce coughing or other irritation of the throat and eyes.

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### NITROUS OXIDE.

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FURTHER experience has not changed the relative position or very much enlarged the sphere of action of nitrous oxide. That it is the safest of all anæsthetics has been established beyond a question. In one institution where such administration is subject of record, this gas has been given over 100,000 times, and not only without a death, but without causing in a single instance symptoms sufficiently serious to necessitate transporting the patient home in a carriage. In the city of Philadelphia alone, it has been given over 133,000 times without a death, and without any injurious results. Death cannot be justly attributed to it in more than four cases since its introduction.—*F. C. Reeve, in Holmes' Surgery, American Edition.*

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### A GOOD DEPARTURE.

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IN London has been founded a national society for the suppression of juvenile smoking. One of the leaders in the movement is Dr. Benjamin Ward Richardson. Letters in approval of the society's aims were read at the first meeting from the Earl of Aberdeen, Mr. Samuel Morley, and others. Dr. Richardson said the use of tobacco by the young was a grave and increasing evil, and that the effects of it on them were destructive both to mind and body. He was convinced that the need for the society was large and real.

## NEW DISINFECTANT.

PROFESSOR CARLO PAVESI, of Italy, proposes as an improved disinfectant, a solution composed of chloride of lime, camphor, and glycerine. This mixture is capable of being used in all cases in which phenic acid is now employed, and its odor is less disagreeable, less irritating, and less toxic than that of the latter. It is said to at once arrest the putrefaction of animal bodies, and is highly commended by the *London Medical Record*.

SIR WILLIAM FERGUSON, after a successful operation on a Manchester millionaire, was asked by the patient to name his fee.

"Two hundred guineas."

"Two hundred guineas," exclaimed the patient.

"Yes," said Sir William. "You forget the life-long experience required to give the proper skill, the time and toil of the journey, and the loss of practice in London."

"But you have been only ten minutes about it," said old Dives.

"Oh! if that is your only objection," said Sir William, in his broad Scotch, "the next time I come, I'll keep ye an 'oor under the knife."—*British Medical Journal*.

HE was in the war of 1812, was shot through the body by a common bullet. There was a hole clear through him. They ran a big handkerchief into the opening, an end coming out at each gap, placed him upon a horse and galloped a mile with him. He recovered, and lived to be over 80 years old.

It was the Mexican war, though, and the hero was Gen. Shields, who was afterward elected to Congress over his competitor, Breese. A newspaper wag saw fit to say:—

"Some men have lost their lungs and lived;  
But stranger far than these,  
The shot that went through Shields' chest  
Instead of him, killed Breese."

"Do you mix anything with your candies?" "Well—ahem—a little glucose, perhaps." "Anything else?" "Perhaps a little clay." "Any chalk?" "Only a very little—not enough to speak of." "I was wondering why you didn't have your candies made at a regular brickyard, of the regular material, so you could warrant to purchasers."

## Varieties.

BY J. E. CRAVENS., D. D. S., INDIANAPOLIS, IND.

### THE TARTRATE OF CHINOLINE.

Those who have read the published reports of Dr. Boedecker's statement before the A. D. A. at Niagara, last August, of his experience with Tartrate of Chinoline in treatment of Porrhœa Alveolaris, will be interested in the following extracts from the *Druggists' Circular and Chemical Gazette*, Jan., 1882.

"It was first discovered in 1839, by Runge, who gave it the name of *leucaline*. Three years later Gerhardt obtained a similar product by distilling quinia, strychnia, and other vegetable alkaloids with potash, which he named *guineoline*, the base being shortly after proved by A. W. Hofmann to be identical with Runge's *leucaline*.

"Its specific gravity at 50° F., is 1.081. It has a penetrating odor resembling that of oil of bitter almonds, and a hot, biting taste, something like peppermint. It is but sparingly soluble in cold water, but more so in hot.

"It mixes in all proportions with carbon bisulphide, alcohol, ether and wood spirit, and dissolves sulphur, arsenious acid, camphor and resin. The tartrate of chinoline is the salt used by Dr. Loewy in recent experiments.

"The *Chemists' Journal*, from which this article is partly taken, adds that as an antiferment, chinoline, in the form of the pure alkaloid, is one of the most powerful as yet known. Added to urine in the proportion of 1-500 of its volume, it prevents putrefaction and the breeding of bacteria, upon which it acts as a violent poison, the

figures in the case of salycilate of sodium being 1-250; carbolic acid and quinine, 1-200; boracic acid and cupric sulphate, 1-133; and alcohol, 1-50.

"It has already found a place in dentistry as an antiseptic. The pure alkaloid in etherial or alcohol solution replaces carbolic acid in the antiseptic treatment of caries. In difficult dental operations, especially in those connected with the gums, the following solution has been used by several first-class dentists with great success.

"Chinoline antiseptic mouth wash:  
 Tartrate of chinoline, . . . grs. 20  
 Distilled water, . . . 3 4  
 Rectified spirits, . . . 3 6  
 Oil peppermint, . . . 1 drop.  
 The solution should be diluted with from five to eight times its bulk of water, and warmed before use.

"In the proportion of a teaspoonful to half a tumbler of water, it forms, when colored with a little cochineal, a pleasant smelling and refreshing mouth wash."

### BIRTH MARK—C. O. D.

The following good story is told of a physician of Dayton, O. The doctor was recently attending a case of labor in the family of one of his patrons, who, though a very excellent man, is a little slow in the payment of his medical bills. Immediately after the birth of the babe the father nervously asked: "Doctor, is the baby marked?" "Yes," quietly remarked the doctor, "it is marked C. O. D." It is needless to add that the bill for that baby was settled promptly.—*Ohio Med Journal*.



### PROMOTION OF OSSEOUS DEVELOPMENT.

Dr. Thorowgood pointed out that the composition of the bones and teeth was practically identical, the chief difference being the larger proportion of inorganic matter in the teeth. The analysis showed that a considerable quantity of mineral food was required for the nutrition of these tissues. The mere administration of the necessary lime-salts was, however, by no means the only thing to be considered in striving to improve osseous development. Thus, in rickets, with an evident deficiency of lime salts in the bones, there was an elimination of from four to six times the normal amount of lime in the urine, showing that the defect was in the process of assimilation. For the dentist, the most serious condition in children was one of acid dyspepsia: the child's breath had a sour smell, tongue furred, with red papillæ showing through, appetite often voracious, and bowels confined or irregular. To give a big-bellied, pale-faced child in this condition phosphate of lime and iron would only make him more uncomfortable; but give him alkaline aperients, regulate his diet, cutting off excess of starch and sugar, order exercise, salt-water baths, etc., and then administer the specific remedies indicated. Of these, the most useful were the soluble hypophosphite of lime and the chloride of calcium; either of these might be given in doses of two or three grains in glycerin and water. The lactophosphate of lime was also a valuable remedy. Diet was most important; the child must be taught to eat slowly; brown bread and Scotch oatmeal would suit some children, and "seconds" flour was preferable to "best whites." By this line of treatment the child would be brought into a condition in which the dental surgeon could work

on the decayed molars with some prospect of his work remaining a lasting proof of his skill. Dr. Thorowgood, in conclusion, touched upon the subject of infant feeding.

An interesting discussion followed, several members pointing out that, owing to the early development of the teeth, and to the fact that, when once formed, they did not alter appreciably, any treatment intended to improve their condition must be effected through the mother, so as to influence the child during the periods of pregnancy and lactation.—*Reports Odontological Society of Great Britain, in Medical Press.*

### THE AMERICAN DENTAL ASSOCIATION AS A SAVINGS SOCIETY.

It was Prof. Mayor, I think, who remarked of the American Dental Association, after attending the Cincinnati meeting in 1883, that it reminded him more of a savings society than of a scientific body. The recent action of this Association in reference to the \$200 prize, seems to verify the correctness of the Professor's qualitative analysis. In a perfectly legitimate way the prize was unanimously awarded to Dr. W. D. Miller, of Germany. After a day or two, and when all the members but about twenty had gone home, a reconsideration of the vote was moved and carried, and the \$200 placed back into the treasury of the Association. This action increased the amount of the savings to upwards of \$1,500. Quite a snug sum, which, if invested in governments, and the interest compounded, would, in the course of 10 or 15 years, double itself. The minority, who remained after the election of officers for the year was over, for the purpose of attending to business, evidently believe in Dr. Franklin's system of

economics. We would respectfully suggest to them the idea of paraphrasing Franklin's motto about saving pennies, thus: Take care of the dollars and dental science will take care of herself.

PRODIGAL.

### THE MEDICAL VOYAGE OF LIFE.

*First Year:* Icterus nenatorum, hyperkinesis intestinalis, and vaccination.

*Second Year:* Dentition, croup, cholera infantum, and fits.

*Third Year:* Diphtheria, whooping-cough, and bronchitis.

*Fourth Year:* Scarlet fever, worms and meningitis.

*Fifth Year:* Measles.

Now half the children are dead.

*Seventh Year:* Mumps.

*Tenth Year:* Chorea and typhoid fever.

*Fifteenth Year:* Hyperæsthesia sexualis.

*Sixteenth Year:* Spermatorrhœa, chlorosis and spinal irritation.

*Eighteenth Year:* Blenorrhœa urethralis.

*Twentieth Year:* Bubo, alcoholic cephalalgia, vertigo.

*Twenty-fifth Year:* Matrimony.

*Twenty-sixth Year:* Insomnia de infanto.

*Thirtieth Year:* Dyspepsia, nervous asthenia.

*Thirty-fifth Year:* Pneumonia.

*Forty-fifth Year:* Lumbago, presbyopia.

*Fifty-fifth Year:* Rheumatism, alopecia.

*Sixtieth Year:* Amnesia, deciduousness of teeth, bony arteries.

*Sixty-fifth Year:* Apoplexy.

*Seventieth Year:* Amblyopia, deafness, anosmia, general dyskinesia, atonic digestive tract, rheumatismus deformans.

*Seventy-fifth Year:* Finis.

—*Med. Record.*

### EXTRACTING WITH GAS IN BREMEN.

"There is nothing very brilliant about our Bremen dentists," said a lady to a member of the profession in Berlin, "but they are very obliging. If you wish a tooth extracted with gas, they forthwith light the chandelier." [Exc.]

### CROTON CHLORAL IN NEURALGIC TOOTHACHE.

DR. VON KIRCHBAUER claims to have had great success in treating toothaches that arise from neuralgia, with *butyl chloral*, or croton chloral. He takes:

Croton chloral, . . . . 1 drachm

Glycerine, . . . . . 6 "

Distilled water, . . . . 2½ ounces

Syrup orange-peel, . . . 4 drachms

Oil fennel seed, . . . . 6 drops.

Dose, a tablespoonful, and if the pain continues very violent, repeat in an hour.

He applies carbolized and chloralized cotton locally. Equal parts of chloral hydrate and carbolic acid are put in a bottle, and when dissolved, prepared cotton is saturated with it and inserted into the cavities of decayed teeth.—*Druggists' Circular.*

### INDELIBLE CHALK DRAWINGS.

The Swiss *Gewerbeblatt* recommends the following method of fixing chalk drawings.

Good black paper is coated with resin in the following manner: common resin (colophonium) and shellac are dissolved in strong alcohol and the solution applied to the black paper with a broad brush a number of times, each coating being allowed to dry perfectly before another is applied. The paper becomes mottled and dull, but acquires a gloss when warmed.

Chalk drawings made on this paper

can be made permanent by covering it with another sheet of well sized paper over the face of the drawing, and passing a hot smoothing iron over it. The extra sheet is carefully removed when cold, and the drawing can then be rolled up without any injury.

### CURE FOR HEADACHE AND FACIAL NEURALGIA.

ED. VARIETIES:—You request short contributions. A local application for headache and facial neuralgia, which I think has no equal in allaying the pain, is to take 1 part oil of mustard and 4 parts alcohol; place a few drops of this on the palms of the hands and apply to the affected parts. Almost immediate relief will be obtained. I think if the readers of the Journal will try it, they will say it is the best thing they have used. I have quite a reputation for curing headaches with it.

F. A. MCAULEY, D. D. S.  
East Saginaw, Mich.

ED. VARIETY COLUMNS:—Not long since a young lady about nineteen years of age called at my office, being afflicted with that painful deformity known as "cleft palate," and asked me if I could construct a plate which would help her articulation. The cleft was a congenital one extending through the soft parts only, but interfered very much with her speech. I made a plate which fitted tightly against the entire roof of the mouth, this portion being of hard rubber, and from this extended a spoon-like projection of velum rubber covering the fissure. She wore this about two weeks and said it helped her, as indeed it did. Afterward I made another plate which differed from the other only in having a very small projection of hard rubber each side of the fissure to hold the velum portion more closely over the fissure, and the extreme end of the soft rubber curving slightly downwards. This last

plate seemed better than the first, and still did not do as well as I would have liked. Will some one who has had more experience in this line of work than I have, please give their ideas on the subject.

Yours truly,  
G. G. H.

### MEDICAL BOOKS IN EVIDENCE.

The Wisconsin Supreme Court (*Northwestern Law Reporter*) has recently held that medical books cannot be read to a jury as evidence, even though such books have been shown by expert testimony to be standard works in the medical profession. The decision is in full accord with previous decisions in other States.

ABERNATHY'S injunction to a nervous and dyspeptic lady, was: "Dismiss your servants, madam, and make your own beds."

DR. ROBERT BARNES says: "The true function of a medical society is to gather together and then diffuse knowledge, to encourage independent inquiry, to survey from time to time, by the light of mutual reflection, the positions attained, and thus to seek sound guidance in the application of our knowledge to our practical duties."

THE total annual consumption of quinine throughout the world is computed at two hundred and twenty thousand pounds, of which one quarter is said to be used in the United States alone.

A CUBIC FOOT of air weighs 538.1 grains, or something over one ounce; 13.06 cubic feet weigh one pound; 65 cubic feet of air furnish one pound of oxygen. An apartment eight feet high, 12 feet wide, and 13 feet long, contains about 100 pounds of air and a room 40 feet square and 18 feet high contains about one ton.—*Boston Journal of Chemistry.*

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## Contributions.

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“A word fitly spoken is like apples of gold”—SOLOMON.

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### BEST MEANS OF PRESERVING THE TEETH.

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BY M. H. CHAPPELL, D. D. S.,

Professor of Pathology and Therapeutics, Indiana Dental College, President of Indiana State Society, Member of State Board of Examiners, etc., etc.

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(Prepared by request of Executive Committee, and read before the Indiana State Dental Society, quarto-centennial meeting, July 29, 1883.)

Continued from page 509.

ODONTOLITHUS (SALIVARY CALCULI).—The various classes have their peculiar characteristics. The deposits are generally *white*, *green-stain*, *yellow* and *black*.

The *white*, consisting of mucus, broken-down epithelium, particles of caseic food, exudations from the free margin of the gums, *ligamentum dentium*, and peridental membrane.

This accumulation undergoes fermentation, or putrefaction



with distinct chemical action, during which period acids are formed, and during their nascent state come in contact with the tooth structure, causing disintegration--caries. During the process of evolution, or fermentation, the *cell* life of primitive *vegetation* (leptothrix) may develop. Or if the patient be more aged, habits formed, with depraved tonicity of system, with putrefaction of tissues, then *corpuscle* or primitive *animal* life (micrococci) may appear.

With these conditions, we find in young people the *active* and *aggressive* causes of dental caries.

In the *green-stain* of the anterior teeth, with infusorial indications, the destructive elements are very powerful and soon destroy the enamel. With this grade of deposit, we find but little, if any, *calculi*, from the fact that its origin is in the mucus which is in an acid condition. The treatment indicated is to *polish* with fine stones, and powder on wooden points, until the surface is smooth and will be self-cleansing, and have the patient use a soft brush with a saponaceous powder, sufficiently alkaline to neutralize the acid tendency.

It is frequently the case that perverted nutrition forms the *predisposing* cause, and too often controls or continues the destructive conditions.

Systemic troubles are indicated in nearly every case. And with neglect, or failure to observe these manifestations, and give treatment, to improve and restore the normal condition of general health, our success is uncertain in healing the gums or preserving the teeth.

The *yellow* calculus is an indication favorable for the teeth but unfavorable for the gums, and may be considered an improvement on the *white* or *green-stain* varieties.

The conditions manifested in the first class are present, in part, with this class. Sometimes we will find systemic conditions normal, with alkaline saliva, then with a perverted nutrition, we find the mucous acid sufficiently to control, and a tendency to the *white* variety.

When this is the case, there are large deposits of yellowish calculi mixed with mucus and epithelium. And if neglected, it will destroy the gums, affect the throat, stomach and blood, with a train of nervous disorders frequently resulting in precarious ill health, and also loosening the teeth and destroying the alveoli.

If the case is of long standing the success will be uncertain; but if not, the treatment will require a thorough removal of all deposits from the teeth, using scalers with the same precaution not to injure the dental ligament any more than possible, for the ulceration that we usually find attending these cases greatly impairs its tonicity, and even its structure. The recession of the gum is usually a *hair-lip* of the ligament, like breaking the *orbicularis oris muscle*.

A wash of aromatic sulphuric acid, say, two drops to one ounce of water, is indicated, for thoroughly cleansing the teeth. Use it in the morning before breakfast for one or two weeks, as may be required, and before retiring at night. After washing the teeth thoroughly with this dentifrice, use fine English prepared chalk, to dry the teeth; and thus particles may lodge between the teeth to neutralize any acid that may form there.

*Black calculus* is associated with normal conditions of the gum, and is very slow in depositing, but its persistency and sharp, irritating edges will endanger the free margin of the gum and the ligament, and cause recession, or *hair-lip*. This class should not be confounded with the exudates thrown off by the periosteum in *constitutional* complications.

A thorough removal of all foreign particles, and using the same treatment as in the last class, is good practice. A stiff brush, used with rotating motion, is indispensable to preserve the gums, when once restored.

PYORRHEA ALVEOLARIS is not always the result of deposits accumulating upon the teeth from the mucus or saliva, but when we find a deposit under the free margin of the gum, we may readily conclude that the tartar is the cause of the pus discharge, and we will treat it as such. If we find that there is no deposit, or that a cure does not follow in our treatment for the deposit, we conclude that there is a constitutional disorder. The excessive use of salt food, or the injudicious use of mercurials or other medicinal agents, may produce this condition. Also improper regimen,—our food may be of such a nature as to furnish an excess of bone-making pabulum. So the blood is furnishing the periosteum a quantity of phosphate of lime, so as to ossify or cause *calcific* deposits in the *canaliculi* and *lacunæ* of the *cementum* to such an extent that effusive granules and corpuscles, with calcific granules are lodged in the periosteum or peridental membrane. These

granules become irritants; then the train of results follow usual to inflammation, suppuration, ulceration, hypertrophy or fatty degeneration.

These granules may be impacted in the cellular coats of the membrane, or after exudation form deposits on the roots of the teeth below the surface of the gums, and form another source of irritation.

I do not claim that any two cases are alike, but modifications of systemic conditions are always observable. Hence the treatment must be rational, keeping in view that safe admonition that a diagnosis by exclusion is the only sure indication for successful treatment.

We may often find corpuscular putrefaction, and the *animal* micro-organisms. But these *bugs* are only one of the *results*, and not the cause. I have a watchful care for the writers who have attempted to inform us that the *anthrax bacillus*, and the *micrococci* have their habitations in and are the cause of pus discharging from the gums. They have their habitation in malignant pustule, and contagious, specific diseases, such as gonorrhœa, diphtheria, erysipelas, etc. It would be as easy to believe that the *pediculus* (or louse) crawls under the gum and chews up the dental ligament and periosteum and spits out pus. But while the classified micrococci have their place and name, the septic spherical or ovoid bacteria are present as a result of primary development, and not by contagion. These germs are easily destroyed with almost any of our anti-septic agents; and no high-toned, long-named article possesses any superiority.

These septic organisms are not alarming, or in the most of cases deleterious of themselves; but the systemic dyscrasia and careless, filthy habits of patients work the mischief, giving the bugs a regular pic-nic.

I have observed in the treatment of these cases that the ligament may be induced to heal, or reattach itself to the neck of the tooth.

Thorough scraping of the cementum with fine instruments that will not lacerate or injure the ligament, will remove the calcific granules impacted into the cementum, and the excessive saline deposits and the provisional callous will adhere, and scar tissue form the attachment, similar to the secondary growth of periosteum with replanted teeth.

Cleanliness, with the use of soap and brush in the mouth, with a change to fruit diet, with bread free from soda or cream of tartar, fresh meats, with no pastries; and with these precautions the most obstinate cases can be controlled and remedied.

The injudicious use of instruments frequently does more harm than good. Likewise over-medication.

It is too frequently the case that the dentist does not study the predisposing causes, or the general health of the patient,—the conversion of uric acid into the urates, resulting in rheumatism, not only of the joints but of the teeth. Therefore the necessity of comprehensive study of dentistry, instead of circumscribed research, and practice correspondingly limited in usefulness.

Filling teeth, or, rather, filling carious cavities, requires various considerations.

(To be Continued.)

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### HINTS.

IN finishing approximal amalgam fillings, I first pack in the amalgam the same as in filling a crown cavity, then cut through with the back of a ribbon saw and finish by drawing a strip of rubber dam through. This leaves the filling contour, and perfectly smooth down to the gum; and the space is so narrow no food can get in. The rubber should be drawn out sidewise, and not lifted out at the cutting or grinding surface.

Plates are often split by the expansion of blocks or plain teeth, when in contact. I strengthen plates at the joints by laying a piece of No. 00 gold wire along the side of the pins next to the cutting edge of the teeth after investing. W. M. SCOTT.

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### INFLAMMATION.

BY GALEN, XENIA, O.

IN the second paper on the above subject, the readers of the JOURNAL will remember that we were speaking of the relative conditions of inflammation and congestion, and of the loss of function of the diseased part. Inflammation at first excites sensibility and contractility, causing pain, tenderness, and sometimes spasms. As examples we may mention disease of the optic nerve



and retina; there will be intolerance of light, specks before the eyes, and cloudy vision. But obstructed circulation may cause a suspension of these properties in the center of the trouble, while in adjacent surrounding parts, the circulation is increased. An example is found of this latter condition in *anemia*. If we subject an artery to pressure, the part which it supplies soon becomes numb, weak, and the temperature is reduced. If the phenomenon is continued, chemical changes take place, decomposition ensues, the part becomes gangrenous, and dies. The sympathetic relations of the inflamed part are generally increased, the natural secretions are either modified in a great degree, or their functional usefulness is destroyed. This involves the changes of nutrition, or perhaps we would better say, the nutritive secretion. This is very important, and should be borne in mind, when treating inflammation in its early stages.

The effusion from inflamed vessels, at the beginning of inflammation, is very similar to that of congestion. Thus we have in the congested capillaries, a tendency to a watery condition, which is often albuminous. For example, when this condition is present in the intestines, diarrhoea is the result—in the lungs and pleura, hydrothorax.

The effusion is at first a thin serum, producing swelling in complex parts, seeking the most dependent portions in the serous cavities, and diluting the mucous membranes.

Fibrin is also effused, part of which may solidify into coagulable lymph, and the remainder be undissolved, as liquor sanguinis. We have a good example in an inflamed pleura, of this condition, where the organ is coated with a film of lymph, and clear fluids are effused into the sac. On its removal from the body, it often separates into a fibrinous clot, and serum.

This, in complex textures, gives hardness to swellings, and produces the condition known as phlegmon, in cellular structures, and hepatization in the lung.

In the frog's web, following inflammation of some hours' continuance, we have the white globules or corpuscles, with specks in them simulating the pale granular globules found in the vessels themselves.

We have here also *exudation corpuscles*, *granule cells*, or *fibrinous globules*.

Mandl supposed them to be globules of fibrin in a consoli-

dated form, and that the liquor sanguinis is seen coagulated in globules, of a like character, under high magnifying powers.

Gerber says they are albumenous granules without regularity of form, and totally unlike the true exudation corpuscle; that they have a defined outline, and in some cases an investing cell, hence the term *granule cell*.

Lastly, some portions of solid effusion have no distinct structure, but are irregular, similar to coagulated albumen, amorphous and homogeneous. Hence we are led to conclude that in inflammatory effusions we find some, if not all, the foregoing phenomena, subjected to different modifications.

The following summary comprises what has been said in regard to inflammatory effusion:—

First, *molecules*, each appearing merely as dark specks, composed of fatty matter, or primitive molecules, according to Darg, Gulliver, and others.

Second, *granules*, according to Addison, measuring from  $\frac{1}{2000}$  to  $\frac{1}{8000}$  of an inch in diameter, each appearing as a light spot surrounded by a dark circle, consisting, possibly, of deutoxide of protein, with a central molecule of fat.

Third, *fibrils*, very fine, interlaced and decussating, like those seen in the buffy coat of the blood.

Fourth, *lymph*, or *exudation corpuscles*, *compound granules*, that measure from  $\frac{1}{6000}$  to  $\frac{1}{7000}$  of an inch, composed of granules and molecules, that are occasional, and are enveloped in cells. Fifth, *pus globules*, that appear to be modified by the last lymph globules, but they seem to be more distinct, and partake more of the cell form, and contain liquid, with fewer granules, irregular in size, forming nuclei. Besides the solid deutoxide of protein, they also contain a dissolved form of protein tritoxide. Sixth, irregular granular and hyaline matter, the first with more or less albuminous matter, with fat; the last with some albumen and gelatine.

These constitute the materials of tuberculous and other aplastic deposits.

In addition to the above, inflammatory effusions generally contain the usual solids, generated by the part, such as mucous globules, epithelial scales, epidermis and blood corpuscles.

Of these elementary parts, the fibrils may form, from the effused liquor sanguinis, in the vessels, and be even removed from

the body entire, or sufficiently so for the purposes of examination; but it is a question whether the others form spontaneously from the liquid fibrin or grow from germs.

The close resemblance of exudation corpuscles and their contents to white globules or granules, that are found in inflamed vessels, would seem to indicate their identity; but it is not easy to understand how they pass through the walls of the vessels, in which no pores are visible when the part is placed under a high magnifying power.

Addison claims that the white globules first pass into the substance of the walls of the blood vessels, and then beyond it; but this is too slow a process. It is probable that nuclei, or molecules too small to be discerned, do pass out in this way, and then grow and propagate into compound granules—both granular and pus corpuscles, and that these corpuscles are formed by coagulation in the effused *liquor sanguinis*, as fibres of fibrin.

These phenomena are the products of inflammation, and are the materials from which new membranes, new textures, and new deposits are formed. They present every phase of plasticity, or capacity of organization, from the perfect cicatrices and false membranes to that of yellow tuberculous matter.

We now come to notice some of the results of inflammation. It is always attended by more or less effusion. When inflammation is slight this effusion may remove the abnormal condition by unloading the engorged vessels, but when it is more marked, that is, intense, and the determination of the blood strong, the effusion may go on to a great extent without resolving. It is here we see the serious effects of inflammation; the effused matter passes the surrounding tissue, deranges nutrition, impairs cohesion, softening textures, which ordinarily retain the effused matter, especially when of a complex nature.

This obstruction of the inflamed part leaves the veins and lymphatics free to absorb, and high pressure and determination of blood favors this absorption, hence we have new matters effused, the old being either forced from their position, or disintegrated and absorbed; the finer exudation corpuscles and fibres are altered, and only the large pus globules remain. This is *suppuration*.

If the original obstruction be extensive, and the inflammatory condition well established, or becomes so, the supply of blood may

be totally arrested, and death of the part may be the result. This dead tissue thus becomes separated from the living, and we have the process known as *sloughing*.

If the provoking cause be great, we sometimes have decomposition before suppuration. This constitutes *gangrene*. If we have inflammation of a lower grade than has been mentioned, with effusion general, and nutrition of the part only partially impaired, and increased deposition of solid matter, *induration* is the result.

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## Correspondence.

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"I charge you that this epistle be read"

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### WHAT NEXT? "YEA, VERILY!"

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*Editor of Ohio State Journal of Dental Science:—*

IN June last I met Dr. S. C. Barnum, of Rubber Dam fame, in the S. S. White up-town house, New York. I was attracted particularly to him by his decidedly changed physical condition. I found him a picture of a distressed victim of nervous exhaustion. He told me he had not been able to operate at the chair for some months, but was doing something in artificial work. After a little general conversation, he said to me: "Dr. Mills, were you not present at the meeting of the old New York Society, held in Cooper Union the evening, my uncle, Dr. Clewes, introduced the use of the rubber dam, and presented it to the dental profession as coming from me?" This was, I think, in 1866. I replied I was, and that in 1874, I read a paper before the American Dental Convention at Saratoga, subject, "What Next?" In this I gave the history of the introduction of your dam, and the manner in which it was received, etc. I said: "And after the enthusiasm had subsided, Dr. George E. Hawes arose in his peculiar style, and quaintly asked, 'What next?'" This article is in print in one of our dental journals. "Well," Dr. Barnum says, "Dr. Mills, I am exceedingly troubled that an effort is being zealously used to take all the *credit* from me, and to place me in a very unenviable position before the whole profession, branding me as dishonest, for, as you know, I have been the recipient of several tangible and valuable testimonials." I said to him: "You need have no fear; the pro-



fession will stand by you. No man can afford to promulgate such a claim to priority, for it comes too late."

He says: "Do you know that Dr. Frank Abbott, President of the New York Dental College, is teaching the students that Dr. La Roche, Sr., is the ORIGINATOR of this dam?" Dr. La Roche is the vice-president of this college. I replied to him: "You be patient; and if these men have the audacity to make this claim, you will find your friends will come to your rescue. As I live, you can count on me, no matter *what* can be brought as proof on their part. That they should allow *all* these years to pass, and be *all* the time amongst us, knowing *all* that has been done, and that you were being made the receiver of so many favors, and not a *lisp* made to disprove your claim, will strike every high and fair-minded member of our profession as a great injustice, and they will say with one acclaim, too late, too late." I told Dr. Barnum it would produce a tidal wave of disapproval that no man or men could afford to face. I left him with this prediction, that they would never *dare* to uncover such claim, for I did not take either of these men to be foolish or crazy. My prophecy has not proved true.

At the meeting of the First District Dental Society, held November 6th, 1883, the subject of loose teeth, historically considered, was down on the bulletin as the subject for the evening, but to the surprise of all, Dr. La Roche, Sr., presented a paper, claiming to be the originator of the *dam*, and read affidavits as proofs. His date is fixed in 1857, some ten years prior to Dr. Barnum.

I will not attempt to describe the very apparent impression that was produced on those present. All kinds of imprecations were distinctly heard, murmuring from all parts of the room. Dr. Abbott made an attempt to defend Dr. La Roche's claim by saying that at the time Dr. Barnum's claim was made known, he did not think much about it, and as it was not very enthusiastically received, he let it pass, etc. To say I have a feeling of astonishment that I can find no language to express, will be only saying what will be echoed from every nook of our profession where this great and blessed auxiliary has been demonstrated. I do not propose to discuss this matter, but leave it in the minds of our whole profession, who will "deal justice to whom justice belongs," "honor to whom honor is due," with a suggestion which

presents itself forcibly to my mind. "What will we do about it?" As we here all know Dr. S. C. Barnum to be a man of modest pretensions, and an upright member of our profession, who has gone in and out before us all these years, quietly and unobtrusively, and we can but feel that to have his claim called in question at this late date, and considering all the publicity given it, and also considering his quiet and polite demeanor, his failing health, it is only kind and just to give him our sincere and hearty co-operation in maintaining more tenaciously the meed of praise already accorded to him. I feel that to italicise these expressions is not enough, but it can be done in a more practical and tangible manner. Let us, one and all, enclose to him a dollar postal note, with our own words of encouragement and praise. By this we will be putting flowers on his home mantle-piece that shall shed a grateful fragrance, helping him to make his last days his best. Dr. Barnum is not over-supplied with this world's goods; his opponents have no need.

G. A. MILLS, *New York.*

Address, Dr. S. C. Barnum, 104 W. 45th Street, New York City.

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*Editor of the Ohio State Journal of Dental Science:—*

WILL you please afford me a little more space in your excellent democratic journal, to notice an article in the October issue of the *New England Journal of Dentistry*? The article referred to is headed "Eastern Truth-Seeker," it being a criticism of a letter I wrote you, which appeared in your August number, and it is signed "Common Sense." Though very little of that desirable article was found in it, but as the writer shows some ability in twisting facts and statements to suit his purpose, I shall criticise him just a little.

The writer says that he and some other gentlemen who, by accident (?) are associated in publishing this *New England Journal*, are deserving of "admiration for the courage of their convictions." Without reference to these other gentlemen, will "Common-Sense" please inform a ready-to-be-admiring "Truth-Seeker," what those convictions are upon the etiology of dental caries? Is he still convinced that \* "it is quite possible for bacteria to enter between the enamel prisms, and by nourishment upon and development in the organic matter contained in the enamel, to

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\* Verbatim clause from one of his lectures.

mechanically break down and comminute the inorganic or lime structure of the tooth?" Is he still convinced that "acids have no effect in *causing* dental *caries*!" He says that he substantially agrees with Dr. Miller, the only difference being in the explanation. I am willing to leave that statement in the hands of those who have carefully followed Dr. Miller in his investigations, asking them to compare, or rather, contrast, the above quotations with Dr. Miller's conclusions. I must believe that "Common Sense" was thinking of A. Weil and his theory, when he wrote "Miller."

"Common Sense" undertakes to show that I meant the Ptolomaic system when I said that "Kepler divested the Copernican system of the universe of its absurdities." I had no reference to the Ptolomaic system. I did not say that he overturned the system of Copernicus, nor did I say that the system was not correct in the main. I simply referred to the absurdities of *unsound reasoning*, nonsense and inaccuracies that are evident in *de revolutionibus orbium*. Is unsound reasoning absurd? Perhaps not to "Common Sense." Perhaps, with Ptolemy, he thinks the earth the center of the universe, and Springfield, Massachusetts, the center of intellectuality. But he should be pretty sure of another's meaning before offering criticism.

"Common Sense" says that "*flask experiments are useless—keep that in mind.*" That is almost too bad, for however wide of natural conditions these flask conditions are, Dr. Miller has found them useful, and quite valuable. So, also, has Tyndall, Pasteur, Koch, and many other investigators, whose opinions on such an important subject are weighty. I hope this assertion by "Common Sense" will not deter them from further investigations by a method valuable in the *absence* of anything *better*. But the best thing in the whole criticism, Mr. Editor, is that "Common Sense" thinks I *asked* for four and a half grains of *his* common sense. Now, the fact is, I have had copious samples of the article he deals in, and I long since disposed myself of the entire stock I had laid in from his warehouse, at a large discount. No, thank you, what instructions I need upon the microscope (and I need very much), I will accept from those who at least know *something* about the subject.

You are very obliging, Mr. Editor, and long may you wave.

EASTERN TRUTH SEEKER.

## “VITALIZED AIR.”

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*Editor of Ohio State Journal of Dental Science:—*

At the last meeting of the Ohio State Dental Society two members were suspended for a violation of the code of ethics by advertising “Vitalized Air.”

It is strange that any persons, having sufficient standing as dentists to secure membership in so honorable a body, should descend to such questionable means of securing practice. “Vitalized Air” is nothing new. It is a mixture of chloroform and nitrous oxide, in indefinite proportions, and was tried nearly twenty years ago, and condemned as being too dangerous for general use. Its recent revival is due to a charlatan; and those who assist in its use and recommend it as either new or superior to nitrous oxide, are either themselves deceived, or they are willfully attempting to deceive the public. To retain men guilty of such acts in good standing in the State Dental Society, would have been to endorse their action—a thing the Society could not possibly do. We trust the lesson will be a wholesome one, and that it may never have to be repeated. \*

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## Societies.

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“Wherewith one may edify another.”

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### D. M. B. A.

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THESE characters arranged in a neat monogram, and surrounded by the words, “Incorporated A. D. 1883,” constitute the seal and badge of the Dentists’ Mutual Benefit Association.” The simple name almost tells the story. It has the usual officers, constitution, by-laws, etc.; and its home is Kansas City, Missouri; the *Missouri Dental Journal* is its organ, C. H. Darby, of St. Joseph, Missouri, is its president; R. J. Pearson, Kansas City, Missouri, is its Secretary and Treasurer. It has six vice-presidents, ten directors, a chief medical examiner and an advisory board, Missouri having six of its members, Kansas two, Illinois three, Ohio, New York, Pennsylvania, Massachusetts, Georgia, Texas and Iowa each one. Applicants for membership must be under



fifty years of age and reasonably healthy. Having lately renewed our age and constitution, of course we can jine. What's to hinder? Applicants must send a fee of five dollars for initiation, and two dollars as an advance assessment; and on the death of a member the survivors are to pay an assessment of two dollars, to be paid to his representatives, provided they are in no case to receive more than \$5,000. Members who go to the bad on the whisky line, or otherwise, are to be suspended and expelled; and, all things considered, proper precautions for the safety of the Association and its membership, financially, seem to have been adopted. The meetings of the Association are to be held annually, time and place corresponding with those of the Missouri State Dental Association.

We cordially approve the objects and aims of the Association, even though it has ruled us out with a rod of iron.

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## NORTHERN OHIO DENTAL ASSOCIATION.

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REPORTED BY GEORGE H. WILSON, D. D. S.

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DR. WATT, *Dear Sir*:—As Recording Secretary of the Northern Ohio Dental Association, it is my duty to send the minutes of the last meeting to you. Owing to a few days sickness after my return I have been unable to report.

The Association was called to order in the parlors of Sloane House, Sandusky, Ohio, at 10 o'clock A. M., Tuesday, May 8, 1883, by the President Dr. Gale French of Pittsburgh, Pennsylvania. The exercises were opened with prayer by Rev. L. S. Osborn. The Recording Secretary, Dr. A. G. Douds of Canton, being absent, Dr. George H. Wilson of Painesville, was elected Recording Secretary *pro tem*. The Committee on Membership reported the names of Drs. C. D. Peck and Charles E. Stroud of Sandusky; Thos. H. Whiteside of Youngstown, and W. P. Horton, Jr. of Cleveland, as suitable persons to become members of this Society. On ballot they were duly elected.

After transacting other miscellaneous business, including extending the courtesy of the floor to all visiting dentists, a motion was made by Dr. Way to have the papers, if any, read at the opening of the subject upon which it was written. Carried.

At the meeting in 1882, a motion was made and carried that the Executive Committee should prepare a list of subjects for discussion in 1883, and send a list of the same to each of the members. The following subjects were presented:—

1st. Methods and materials for filling teeth.

2d. Diseases of the gums; causes and treatment.

3d. Should the Operative and Prosthetic Departments of the Dental Art be separated?

4th. Pulpitis.

5th. Miscellaneous.

There not being a paper upon the first subject, it was presented for discussion. Discussed by Drs. Whitsler of Youngstown, Whiteside of the same city, Horton of Cleveland, Stone of Michigan.

The hour of noon having arrived, Dr. Whitsler moved that we adjourn until two o'clock, to remain in session till five, then adjourn until seven, when we should again assemble and adjourn at nine p. m.

#### AFTERNOON SESSION—FIRST DAY.

President in the chair. Minutes read, and after correcting, approved.

Dr. Lyder of Akron, moved that a committee of three be appointed to examine dental appliances and appoint a time to present them to the Association, not to conflict with the discussions. Carried. Chair appointed Lyder, Brown and Ensign.

The subject of the morning was continued and discussed by Drs. Waye of Sandusky, Robinson of Jackson, Michigan, Pres. French, Horton, and Brown of Cleveland, Stone, Lyder and Whiteside.

It being about the time for adjournment, the chairman of the Committee on Dental Appliances, Dr. Lyder, reported that Dr. Frank Craeger of Fremont, Ohio, had at his room an electric mallet and attachment to the Bonwell-Webb plugger, and on account of the battery could not be brought to the Association room, and moved that we adjourn to his room. The attachment to the plugger was a simple device to regulate the blows, by which he could produce single strokes. The engine is held in the hand and operated by the same cords as the plugger.

## EVENING SESSION.

Called to order at 7.45. President French in the chair, Dr. Charles Stroud, Secretary *pro tem*. Minutes read and on motion approved. Dr. Peck moved that the first subject be passed, and the second one taken up.

On motion of Dr. Brown, Dr. Robinson of Michigan, read an extract from the *New England Journal*. The subject was further discussed by Drs. French, Horton, Lyder and Waye.

The convention adjourned until Wednesday, 9 A. M.

## SECOND DAY, MAY 9TH.

Association called to order by President French at 9.15 A. M. Minutes read and approved. Dr. H. Courie of Detroit, elected an honorary member.

Drs. Waye, Brown and Lyder were appointed a Committee to select delegates to the American Dental Association.

On motion the second subject was passed and the third taken up. Opened by a paper by Dr. Waye. Discussed by Drs. Field, Waye, Robinson, Lyder, Horton and Whiteside.

The time for electing officers having arrived, the following were elected :—

President—Dr. Gale French of Pittsburgh, Pa.

Vice President—Dr. Ira Brown of Cleveland.

Corresponding Secretary—Dr. H. F. Harvey of Cleveland.

Recording Secretary—George H. Wilson of Painesville, Ohio.

Treasurer—Dr. J. E. Robinson of Cleveland.

Dr. Waye was granted permission to revise his paper and forward it to the OHIO STATE JOURNAL OF DENTAL SCIENCE.

The Committee on Delegates to the American Dental Association reported the following names : Drs. L. Buffett, C. Butler, Lyder, I. Brown, Harvey, Waye, French, Whiteside and Charles Stroud.

Adjourned till 2 o'clock.

## AFTERNOON SESSION.

Called to order by President French, at 2.10. Minutes read and approved.

The President appointed the following committees: Ethics—Drs. L. Buffett, E. J. Waye and I. Brown. Membership—Drs. J. W. Lyder, D. R. Jennings and J. R. Bell.

Dr. Field moved, That it is the sense of this meeting that the Operative and Prosthetic Departments of the Dental Art should be separated. Lost, only one vote in the affirmative.

The third subject was further discussed by Drs. Field, Waye, Horton, Wilson and Charles Stroud.

Moved and carried that the third subject be passed and the fourth taken up. Dr. Wilson read a paper on the subject. Discussed by Drs. Brown, Waye, French, Horton, Whiteside, and Whitsler.

The Association adjourned to meet in Cleveland, the second Tuesday in May, 1884.

GEORGE H. WILSON, Recording Secretary.

[The good Northern Ohio will forgive the delay in publishing this paper. It crawled out of the back end of its pigeon-hole, and was supposed to be lost, but autumnal house-cleaning brought it to the surface. Don't ask how much rubbish had accumulated on top of it. We rejoice that we have found it. Our first trial at reporting for the press was made at the convention which culminated in the formation of the Northern Ohio, hence we always feel that we are almost a member of it.—ED. JOURNAL.]

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## OHIO STATE DENTAL SOCIETY.

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[Reported for the Journal ]

THE eighteenth annual meeting was held October 31, November 1 and 2, 1883, in the Board of Trade Room, City Buildings, Columbus.

President J. W. Lyder of Akron, and Secretary J. H. Warner of Columbus, both present. The attendance, which was not as large as usual, averaged about seventy-five.

The following subjects were discussed :—

- { 1. Etiology of Dental Caries.
- { 2. Is Dental Decay unitary or multiple ?
- 3. Dental Education.
- 4. Tinfoil as a Filling.



## FIRST DAY—MORNING SESSION.

The Secretary reported that one thousand copies of the Transactions for 1882 had been printed and distributed to all parts of the world. The net cost to the Society was \$36.70, with the possibility of a reduction to \$26.70, or about  $2\frac{1}{2}$  cents each, which included the cost of distribution. The thanks of the Society were certainly due Messrs. Ransom & Randolph of Toledo, who obtained about \$150 worth of advertising for the TRANSACTIONS.

W. H. Carson, D. D. S., of St. Clairsville, and S. D. Potterf, D. D. S., of Defiance, were admitted to active membership.

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AFTERNOON SESSION.

The certificate of Dr. D. Gale French, of Pittsburgh, as a delegate from the Pennsylvania State Dental Society, was received.

## DISCUSSION—ETIOLOGY OF DENTAL CARIES, AND IS DENTAL DECAY UNITARY OR MULTIPLE?

PROF. H. A. SMITH, Cincinnati: Knew of nothing new on the subject, but gave a summary of the views held by various investigators. Dr. Watt's arguments in support of his theory are almost irresistible, yet not entirely satisfactory. Dr. Watt holds that the mineral acids—nitric, sulphuric and hydro-chloric—are the only agents of decay, and other investigators ignore them altogether, giving the credit to the vegetable acids. They have so modified their views as to regard acids as the primary, and the micro-organisms as the secondary cause of dental decay. The micro-organisms referred to are vegetable, not animal organisms. It is not settled that only three varieties of acids cause decay, nor that the *fungi* are always present in decayed dentine. It is important that we know all, and investigators outside of the profession should be encouraged to aid us in certain directions. Do not believe in sitting down on them merely because they are outside of the profession. In my judgment dental caries is but one disease, the acid—mineral or vegetable, whichever it is—breaking down the tissues, and the micro-organisms completing the destruction.

DR. A. BERRY of Cincinnati: Defended Dr. Watt's theory,

and was not ready to believe that the micro-organisms originated decay.

DR. F. H. REHWINKEL of Chillicothe: No person has offered a more complete explanation of dental decay than Dr. Watt, who is frequently not understood when quoted. The profession is too much inclined to adopt new theories and new remedies without sufficient caution. The holders of the various theories are now more inclined to come together in their views.

PROF. SMITH: I did not criticise Dr. Watt; simply stated his theory. It does not satisfy me. There are other conditions which Watt's theory leaves unexplained. If we were sure that the *fungi* are always present in decay, the proper way to effect a cure would be to use an antiseptic; prefer to use each agent by itself, carbolic acid uncombined with glycerine or anything else. Likes the old-fashioned creosote best, although there are many new disinfectants, oil of eucalyptus, etc.

DR. REHWINKEL: Carbolic acid is not so highly regarded as formerly, and oil of eucalyptus, after confinement in a pulp canal, is abominable.

PROF. SMITH asked Dr. Rehwinkel if he considered dental caries a pathological condition.

DR. REHWINKEL: That is a very simple question. It is not a pathological condition at first, but soon becomes one.

DR. C. R. BUTLER of Cleveland: It is a fact that in deep-seated cavities, filled with metallic substances, decay is recurrent. That is, in cavities where a layer of partly decalcified dentine, supposed to have been disinfected, had been left. Do not know if it is from want of perfect disinfection, leakage or other cause, but the remedy is in filling with cement, and capping with gold or other metal.

PROF. SMITH: Where the oxy-chloride is used, the good result is due to the therapeutic effect, but with the oxy-phosphate, simply its capacity to make a water-tight filling.

DR. J. A. ROBINSON of Jackson, Michigan, thought the remedy was in hermetically sealing the cavity. The discussions on etiology are so confusing that an ordinary man couldn't tell what was what. (By permission, Dr. Robinson then read a paper entitled "Dental Protection, or Leaves from My Experience.")

DR. J. M. WHITNEY of Honolulu, Hawaiian Islands (an honorary member of the Society, and a former resident of Ohio),

spoke of his fourteen years' residence on the islands, and of his gratification at being able to meet with the Society after eight years' absence; of the pleasure derived from the printed TRANSACTIONS, which had been sent him. He then gave the results of his observations among the natives—especially of the prevalence of Riggs' Disease, which brought on an animated discussion, concerning the claims of Riggs to the disease, between Drs. Rehwinkel, J. H. Warner, and others.

DR. J. H. WARNER of Columbus, wished to retract a statement he had heretofore made, that albumen was coagulable by creosote; it was not by pure creosote. The creosote he had been using, when he made the statement, was impure. He had since procured pure German wood-creosote.

DR. WILLIAMS of New Philadelphia: Pure creosote is not an escharotic in the slightest degree.

DR. A. BERRY: The so-called Riggs' Disease was first noticed by Dr. Hayden, co-founder with Dr. Harris, of the Baltimore Dental College. He called the disease "conjoint deterioration of the gums and alveoli." In Dr. J. Taft's office twenty years ago, I saw a case which Dr. Taft told the patient (a young lady) could be cured, and it was no new thing then.

DR. W. P. HORTON of Cleveland, continued the discussion by reading extracts from Dr. W. C. Barrett's pamphlet on examination of the teeth of pre-historic races.

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NIGHT SESSION.

The by-laws were so amended as to make the date of the annual meeting the last Wednesday in October.

In continuing the discussion of the first and second subjects,

PROF. J. TAFT of Cincinnati, said, among other things: The subject may be divided into two classes: Predisposing Causes, and Exciting Causes. Among the first are faulty nutrition, enfeeblement of the vital forces, and imperfect enamel. Of the exciting causes, he said, most positive opinions had been presented from time to time, only to be knocked over by others. The acid theory is the most generally accepted. The differences in the appearance of the residuum is mainly dependent on the kind of acid causing the decay. Sometimes it is tough and leathery, sometimes brittle,

crumbling readily—completely disintegrated. He did not agree with the idea that these differences could be accounted for by the varying strength of the agent causing the decay, because the acids are always in a nascent condition, and so attack uniformly as to strength. A better explanation would be the varying degrees of density of the tooth structure. It seemed to him that we could very readily decide which acid had an affinity for tooth structure, out of as well as in the mouth, and thus know which had caused certain results. His impression was that bacteria did not cause dental caries, being merely secondary. If they were primary we would find the organic material destroyed and the lime salts remaining.

PROF. SMITH: It is well known that the destruction of the teeth by what is known as chemical abrasion, is caused by lactic acid. We are accustomed to treating it with ant-acids, but I think we might better treat it with sulphuric acid, which would form an insoluble compound and crowd out the decay as in filling.

PROF. TAFT: Prof. Smith is correct—the application of ant-acids will amount to nothing. The rational treatment of that affection is systemic change, so that lactic acid will not be produced. The method I have adopted, with the best results, has been a change of diet—discarding milk entirely.

DR. REHWINKEL: It is claimed that this form of decay may be arrested by touching the surface with a heated wire, producing a film of carbon. This confirms Prof. Smith's theory. I have seen a case of this disease where the abrasion continued beneath the gums, and when the roots had to be extracted they were found to have been uniformly dissolved off the surface their entire length. Bicarbonate of soda will sometimes relieve the sensitiveness of the dentine, but not permanently.

PROF. SMITH: I believe with Prof. Taft, that the origin is mainly systemic. In mouths so affected you will invariably find a starchy deposit about the teeth, which will produce the lactic acid. If you can keep the patient in the chair long enough to produce blackening of the surface with sulphuric acid or nitrate of silver, you may relieve circumscribed cases, but the remedy is rather painful.

PROF. TAFT: The sulphuric acid converts the carbonate of lime into the insoluble sulphate of lime, and you have the double result of that and the carbonization. The nitrate of silver



simply produces a blackening of the surface by the deposit of the oxide of silver—not carbonization of the organic matter.

DR. J. H. WARNER: Have repeatedly applied nitrate of silver to sensitive dentine. No pain whatever is produced by it.

DR. D. G. FRENCH of Pittsburgh, Pa.: I have known the most intense pain result from its use.

PROF. TAFT: Both statements would be correct if qualified by the word "sometimes." In some cases the surface will be found sensitive after several applications.

DR. J. M. WHITNEY: Among the many thousands of teeth that I have examined on the Sandwich Islands, the primary decay was of this nature; also among the Chinese, whose food is almost entirely rice.

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#### SECOND DAY—MORNING SESSION.

PRESIDENT LYDER called attention to applications from dental students for recommendation to certain colleges at reduced rates for tuition. Since the last annual meeting, one such certificate had been issued by the President and Secretary.

DR. J. H. WARNER said it was the getting of about \$500 worth of advertising for a college by a reduction of \$50 on one man's scholarship. The Society ought not to have anything to do with it.

PROF. TAFT: As this Society has a college in the State and another in an adjoining State, it is questionable whether it is just the thing to discriminate against them, the fees at Cincinnati or Ann Arbor being about the same as the reduction would leave them at the colleges under discussion.

DR. E. J. WAYE, of Sandusky, thought it was wrong in principle—it would simply give the student an additional \$50 to spend in other directions.

PROF. TAFT offered the following:—

*Resolved*, That hereafter this Society declines to certify any student for a beneficiary scholarship in any college.

The resolution was adopted after a spirited debate, Prof. Smith and others being of the opinion that legislation on the subject was uncalled for.

A letter was read from Prof. W. H. Dorrance of Ann Arbor, regretting his inability to be present. Also from

Dr. Geo. Watt of Xenia, containing suggestions for the annual meetings. A committee was appointed to report upon Dr. Watt's suggestions.

DR. J. G. TEMPLETON of Pittsburgh, Pa., read a paper on "The Effects of Zymotic Diseases on the Dental Organs."

The third subject, "Dental Education," was opened by papers from Drs. H. H. Harrison of Cadiz, and A. Berry.

DR. C. H. HARROUN of Toledo (ex-member of the State Board of Dental Examiners): There is a gross lack of education in the majority of young men attempting to enter the profession. Their idea seems to be to get into the profession in the easiest way possible. Every man entering the profession should strive to get the best education attainable. A much higher preliminary education is now demanded for admission to dental colleges.

DR. A. BERRY did not so understand it. The student went to the college, planked down his money and was admitted. Only at Michigan and Vanderbilt Universities is a preliminary examination required.

PROF. SMITH asked if anyone had ever been rejected at those examinations.

DR. E. J. WAYE thought if no one was rejected the thing fell to the ground, but doubted that it was so. A man must possess a certain amount of intelligence to be able to receive instruction—he might be a good mechanic and not make a dentist.

PROF. SMITH: The students now received in the colleges are better educated than formerly. Prof. Cox, of the Cincinnati Law School, told me that they do not require a preliminary examination—they go upon the idea of the survival of the fittest. The preliminary examination is all bosh; have heard parties connected with the institutions requiring it say so and ridicule the idea.

DR. R. G. WARNER of Columbus: Am not connected with a dental college—sorry that I am not—but would like to sandwich in a few words as a layman. The profession at large should be more careful about taking students. The dentist should make the preliminary examination, and the student should be a good citizen to start with.

PROF. SMITH was reminded of a remark by the late Prof. Buckingham: "If you want to find out all about a thing, go to some one who has the least opportunity of knowing anything about it." The worst students we receive are those from dental

offices—the voluntary students who come without office pupilage are the best.

DR. WAYE: Shouldn't the colleges stop them there?

PROF. SMITH: The dental colleges are run by men who are human and are conducted on business principles. If one college doesn't take them another will. I am not a reformer.

DR. HARRISON believed that a man—college or not—should discourage those not fitted.

PROF. SMITH: The principle is correct in the abstract, but I believe in the survival of the fittest. A man might succeed in spite of the superior judgment of the man who rejected him.

DR. WAYE: A young man present tells me that he knew of three or four rejected at the college from which he graduated. Never had the advantage of a college education, but wish I had; in fact, when I studied I didn't know there was such a thing as a dental college. Think the colleges owe it to the profession to require a higher standard for admission.

DR. J. H. WARNER had once read that when Rome was kept the cleanest every man swept his own door-yard. The gentleman, in pitching into the colleges, had overlooked a great source of many, very poor, so-called dentists, and that is the State Board of Dental Examiners. [Applause and laughter.]

DR. REHWINKEL: Now, Warner, take off your safety valve and relieve yourself.

DR. WARNER: They should raise the standard so that the scalawags could not get in. I am not one who believes in crying down the colleges, for they have been gradually raising the standard. Men who take students and graduate them in six months, come here and tell the colleges what to do. Gentlemen, to raise the standard in this State, "every man must sweep his own door yard." I believe that the Board is doing better work than five or ten years ago, but would vote to instruct it to reject all applicants who had not taken at least one course in a dental college.

DR. J. F. SIDDALL, of Oberlin, wanted to know what to do with those who did not go before the Board nor to college. We have a prohibitory dental law that doesn't prohibit.

DR. J. H. WARNER: Never knew of a rat trap that would catch all the rats. So long as the standard of the Board is low, the colleges must lower theirs to compete with them.

DR. C. R. BUTLER said, as a member of the Board: The standard has been raised each year. Think it would trouble the best of us to give intelligent answers to the questions proposed by the National Society of Examining Boards. If dental education was as free as the common school, just as many would remain ignorant. It is all bosh to stand in this society and harp on dental education—it is mere theory and can do no good; it is like the man who does not use amalgam.

PROF. SMITH: Does he?

DR. BUTLER: He does. The idea of "the survival of the fittest" is the grandest thought that has been uttered on the subject. No one, morally, physically, or intellectually defective, can occupy a high place in any profession. The fact that the public is demanding a better class of practitioners will raise the standard; and the laws of supply and demand will regulate it. The small number passed by the Boards can make but very little difference in the standing of the whole profession.

DR. J. F. SIDDALL wished to criticise the Society for publishing the names of applicants who failed to pass the Board.

DR. F. H. REHWINKEL: I haven't opened my mouth for five or six years to say a word on dental education; but as a member of the Board, I have something to say. The profession is very much divided on this subject. There are those who think that no man is fit to study dentistry unless he has a medical education, and they are getting too proud to call themselves dentists. There is another class—unfortunately the largest one—who look upon dentistry as they do upon shoemaking or blacksmithing. They think if a man is making two dollars a day he is doing "bully." They lack the essentials of gentility, and cannot appreciate the finer privileges of a profession. Now what does the profession do with them? Whether they get in through the inefficiency of the Board or of the college, I know not, but the Society puts them on an equal footing with the man of high attainments. It is all wrong; a distinction should be made. If Dr. Warner hadn't been asleep during the year, he would know that the standard of qualification before the Board had been very materially raised. At the meeting of the State Boards at Niagara a uniform standard was agreed upon, and the questions now before the young men who have appeared during this meeting are so far above what has been proposed heretofore, that one young man who has been in



practice seven years, after studying the questions over for an hour, decided to not now stand an examination. In regard to publishing the names of those rejected: that is a moral cowardice of which the profession has been guilty in not doing it before. I do not care who his preceptor was, if he fails to pass, he ought to be published, where he practices, that people may know that he is not fit to practice. It ought to be a spur to him to go higher.

DR. J. F. SIDDALL: Do you expect them to come before you with that staring them in the face?

DR. REHWINKEL: I do not care whether they come or not. That has nothing to do with it. The question is, is he fit? If I could have my own way about it, and was educating a young man for the dental profession, I would lay a foundation of a medical and surgical education, and then teach him the manipulative practice of dentistry. It is so in Germany, where there are no dental colleges. After leaving the medical schools, if they wish to practice dentistry, they must get their instruction at private clinics, of which there are only two. I feel that the root of the evil has never been touched—it is the standing of the profession itself. There are too many whose only idea is to know how to cook a set of teeth on rubber for \$5. Whatever the profession demands, the colleges will provide. They have done good work and will do better.


PROF. TAFT: The Board stands as a guard to protect the public from empiricism. Hereafter young men, when they try to enter the profession through the State Board, will find that they have to be as well prepared as to pass most of our dental colleges. The stimulus given has been shown in the progress of those who, having been rejected one year, have gone home, prepared themselves, appeared before the Board the next year, and have passed. The sentiment among the members of the Boards at the Niagara meeting was that the standard should be so raised as to compel all to prefer to go to the colleges.

#### AFTERNOON SESSION.

The Committee appointed to take into consideration Dr. Watt's suggestion, reported in favor of the appointment of committees of two, for each subject to be discussed at the next annual meeting, whose duty shall be to carefully investigate the subjects assigned to them. The privileges of the meeting were extended to

Dr. E. G. Altman, a graduate of the Hahnemann Medical College of Chicago. Howard Hall, a veterinary surgeon who was present, was requested to enlighten the meeting on the subject of horse dentistry. He explained that it was unnecessary to throw a horse before operating on his mouth. He approaches him kindly and examines the teeth by placing his hand, with fingers extended, in the mouth—the thumb against the roof and the little finger against the floor. He said that most of the affections of the head of the horse, were caused by diseased teeth. He exhibited specimens to illustrate his remarks, and was kept busy for a while answering questions put by the members.

The fourth subject, Tinfoil as a Filling, was discussed by

DR. J. W. LYDER of Akron, who described his method of using Robinson's Fibrous Foil. Selecting the thinnest sheet (there are several thicknesses in a box) he cuts off a strip about one-quarter inch wide, then cuts into four equal parts (thus ) a leaf of No. 4 gold foil, and folds the fibrous foil in the gold foil, using the edge of the card usually found in gold foil envelopes and a spatula or the shears. For introduction into the cavity he cuts the strip into suitable sized blocks or mats. Has found that it remains easily and solidly in the bottom of large cup-shaped cavities, without retaining pits, and gold will weld to it readily. At cervical margins, or against frail faces of enamel in the anterior teeth, the gold covering gives a better color and greater density than the fibrous foil alone. It can be malleted into frail teeth with less risk of fracturing the tooth than gold alone. In putting in cement fillings, uses fibrous foil at the cervical border and finishes with the cement. Another method is to pick the fibers from a sheet of fibrous foil, mix them with the fluid of the cement, then incorporate with the powder, and fill as usual. This gives nearly a metallic surface, and a smooth one, for the fibers can be burnished down on the surface.

DR. A. BERRY: There is no doubt about the superior durability of tin, at the margin of the gums. Used as Dr. Lyder describes it is a valuable substitute for amalgam and other fillings.

DR. C. R. BUTLER: Tin is one of the oldest and best materials used for filling teeth. There are fewer men capable of doing good work in tin than there should be. Dr. Corydon Palmer, whom I expected here to say something on this subject, is one of the most successful users of tin foil I have ever seen. There is

less death of tissue under tin than gold. One of the greatest wants, heretofore, was cohesiveness, which has been supplied in this fibrous foil, giving us an easily packed filling, but it is as deceptive as crystal gold. It requires the greatest care, and instruments adapted to its use. The pluggers should have a sharp angle to the serrates, and the points of the serrates should be ground out smooth and polished. [Instruments exhibited.] It requires considerable force to unite gold with fibrous foil in the cavity. In using it at the margin or base, I do not depend on the gold cohering to it—it will not do anything of the kind. It makes a good base to start gold on, helping to sustain a frail tooth and the tooth to sustain the filling. Have filled a good many front teeth by placing a piece of gold inside against the enamel to give the gold-color, finishing with fibrous foil and gold. Expect them to be saved better than with all gold. [In answer to questions by members.] The fillings were malleted in. There is no danger of bursting the tooth. There are several thicknesses of the foil—prefer the thickest, cut into blocks, according to the size of the cavity. The breaking or chopping up can be avoided by cutting the long way of the grain. Take a bad shaped cavity, where you can't get retaining pits or walls, you can drive in the mass so that it can be capped with gold, and thus prevent the attrition throwing it out during mastication. I have a preparation of sticking wax. The formula is a modification of one given me last summer by Dr. Wheeler of Albany :

Gum damar,	.	.	.	.	.	.	.	.	3	vij
Bleached beeswax	.	.	.	.	.	.	.	.	3	jv
Canada balsam	.	.	.	.	.	.	.	.	3	j

While operating, if you happen to knock a hole in the rubber dam, raise it up and stick a piece of paper over the hole with the wax. Where it is impracticable to apply a clamp, push the dam well up against the gum, dry the tooth, warm and apply a small piece of the wax against the tooth and dam. The warmth of the tooth will keep it sufficiently flexible to permit of adjustment. [NOTE.—This wax will be found useful, also, in adjusting gold and porcelain crowns; attaching single teeth to trial plates, etc., especially in warm weather.]

DR. D. G. FRENCH had nothing but words of commendation

for fibrous foil. Did not expect the Robinson or any other material to meet with uniform success with each and every one." Dr. Butler has tried to make us believe that it and gold can not be welded together. My experience satisfies me that it can be. The great difficulty is lack of force. Fibrous foil has been likened to crystal-gold. Now, the finest fillings can be made with crystal-gold, but it takes a fine operator to do it. It has even been said that crystal-gold is not fit to enter into the composition of a gold plug. A careful man can make good fillings with it. A bungling dentist will be pretty sure to make a bungling job with any material.

DR. J. G. TEMPLETON: This material has almost superseded the use of amalgam in my practice, and I practice in Pittsburgh, which is a very hot-bed of amalgam. Have never seen an amalgam that would not shrink, although the manufacturers claim that they do not. There is nothing better adapted to ruin a man's reputation than amalgam. Gentlemen, if you want to elevate the profession stop the use of amalgams. Have used fibrous foil about sixteen months. At that time I filled a tooth with it, combined with gold, and the filling is still in good condition.

DR. W. L. GARES of Columbus, described his method of combining tin and gold. Had found fibrous foil cohesive.

DR. J. R. CALLAHAN of Hillsboro: Some time ago had built up a bicuspid crown, almost from the gum, with fibrous foil and covered with two thicknesses of No. 60 gold. The filling is still good. Have used a great deal of it, and so far as I know have not had any failures. Sometimes start a filling with amalgam and finish with this material. Prefer this foil to gold at cervical margins.

DR. R. G. WARNER: Being a new thing we have had nothing but successes so far. Think we should be careful with it.

DR. E. J. WAYE: There is always some one to take the opposite side; and in this case I am the man. I became very enthusiastic over this material at first. Had filled a large posterior cavity in a molar with it, using a matrix, and more than ordinary care, but it was a failure. With less care and an average operator, you can make better fillings of tin-foil. There is a certain amount of cohesiveness in tin—just as much as in felt foil. That is my experience.



## NIGHT SESSION.

DR. J. H. SIDDALL of Canton, read a paper on "The Old and the New Dental Engine," exhibiting his new suspension engine, and improved Hodge hand-piece.

The following officers were elected to serve during the ensuing year :—

President—A. Berry of Cincinnati.

Vice-President—C. H. James of Cincinnati.

Secretary—J. H. Warner of Columbus.

Treasurer—G. W. Keeley of Oxford.

And for three years, Members of the State Board of Dental Examiners—J. Taft of Cincinnati, F. H. Rehwinkel of Chillicothe.

## THIRD DAY—MORNING SESSION.

President A. Berry in the chair.

Previous to the session, an exhibition was given of Verrier's Continuous Gum Furnace, heated by coal gas.

The Committee on Amendment of the Dental Law reported in favor of having the law so changed to provide for the registration of all dentists with the Clerk of Court of Common Pleas in each county, and requiring that a certified copy of the registry be sent by the clerk to the President of the State Board of Dental Examiners. The following committee was appointed to obtain the necessary legislation: Chairman, W. P. Horton, Cleveland; A. F. Emminger and J. H. Warner, Columbus; I. Williams, New Philadelphia.

Drs. J. Taft and G. W. Keeley were appointed, with power to add to their number, a committee to prepare a history of the profession in Ohio.

Dr. C. H. James gave notice of proposed amendments to the Constitution and By-laws as follows :—

*Constitution*, Section VI, Art. 2, insert "reprimand, suspension or," before the word "expulsion."

*By-laws*, Section 7, in place of "the next regular meeting of," to read "immediately thereafter." [These proposed amendments have special reference to violations of the Code of Ethics].

DR. J. F. SIDDALL read some very amusing verses which were loudly applauded.

The Committee on Ethics—C. H. Harroun, C. H. James and

H. H. Harrison, made a report on the charges preferred against R. Gilbert Warner and Will L. Gares, both of Columbus, for a violation of the code, finding them guilty and recommending that they either be expelled or suspended from membership, until they should make satisfactory acknowledgement.

The following advertisement, which appeared in the Columbus papers, was the basis of the charges against them:—

### NEW FIRM.

#### THE WAY IT HAPPENED.

“Good morning, Will!”

“Good morning, Doctor!”

“I dropped in to congratulate you in the first place, also to make inquiry, and third, to talk business.”

“All right. I am ready for either.”

“First, then, Will (pardon me for calling you Will; I can’t address you as Dr. Will L. Gares).”

“Certainly; that’s all right.”

“Well, I hear good report of this ‘Vitalized Air’ which you give for the painless extraction of teeth, and also that you are working into a good general dental practice.”

“Thank you, thank you; that’s cheering. I will say to you that I am succeeding beyond my expectation.”

“Tell me, Will, about this ‘Vitalized Air Apparatus’.”

“Well, you see it there. It is a handsome affair. It is patented. I bought it and the exclusive right to use it in Columbus and Franklin county. I find its use in extracting teeth has increased my general practice and given universal satisfaction to my patrons.”

“I am very glad, indeed, and that you may know I make this inquiry for proper use, I will at once say I came in principally to talk business.”

“I don’t understand you.”

“Well, I will explain. In 1871 I began to make and use nitrous oxide, or laughing gas, in extracting teeth. There was then a good deal of uncertainty with it—the gas was not uniformly pure, nor fresh. In a short time I sold out my machine and have not used *that* kind of gas since. But to the point. The satisfaction given by this extracting apparatus which you control, known as ‘Hurd’s Vitalized Air Apparatus,’ together with your successful dental practice, has induced me to make you the offer of a partnership with me.”

“Partnership! I consider such an offer a compliment indeed. I will think about it and report later.”

“So with those conditions it is settled is it?”

“Yes; I’m agreed.”

“So am I. We will meet to-night and fix up particulars.”

“Shake! So at last it is R. Gilbert Warner and Will L. Gares consolidated, and hereafter

WARNER & GARES, Dentists,

71 North High.

DR. R. G. WARNER made repeated attempts to gain the Chairman's recognition, but President Berry persistently ignored him. He then addressed himself to the members, stating that the President seemed to be under the control of another Columbus dentist—the man at his right, (the Secretary, Dr. J. H. Warner)—that there was a special effort made to crush him, whether guilty or not. Weeks before the meeting somebody—whom he knew not—had had printed and sent to the members copies of the advertisement, and they had been freely scattered about the hotel corridors in Columbus. He would like to know at whose expense. The President here ordered Dr. Warner to sit down, and used his gavel so vigorously that Dr. Warner could not be heard.

PROF. SMITH thought that the Chair was inclined to be severe on Dr. Warner, and moved that twenty minutes be granted him in which to make his explanation. After considerable debate the motion prevailed, although it seemed to be the opinion of many, that as they had been tried and found guilty by the Committee, it was unnecessary to try them before the Society. The Committee might as well be done away with if such was to be the practice.

THE PRESIDENT then said that the accused could now address the meeting, but he would not be bored with long speeches.

DR. R. G. WARNER said they had not violated the spirit of the code as he understood it, and read from an anonymous article by "Querulous," in a late number of the *OHIO JOURNAL*, to show that the practitioner need not live up to the code if it conflicted with his interests—said they used nothing but pure liquid nitrous oxide gas in the apparatus—called it vitalized air because that was the name of the apparatus. He was then questioned by Prof. Smith and Dr. James.

DR. C. H. JAMES said the case was a gross violation of the Code of Ethics, and read that part of the code pertinent to the case, as follows:—

ART. II. SEC. 1. A member of the dental profession is bound to maintain its honor, and to labor earnestly to extend its sphere of usefulness. He should avoid everything in language and conduct calculated to dishonor his profession, and should ever manifest a due respect for his brethren. \* \* \*

SEC. 3. It is unprofessional to resort to public advertisements, cards, hand-bills, posters, or signs calling attention to peculiar styles of work, lowness of prices, special modes of operating; or

to claim superiority over neighboring practitioners; to publish reports of cases or certificates in the public prints; to go from house to house to solicit or perform operations; to circulate or recommend nostrums; or to perform any other similar acts.

He then proceeded to show that Dr. Warner had convicted himself in his answers to the speaker's questions. The honor of the profession was at stake. Shall we cut the head from the monster now, or wait until our own heads are cut off?

DR. J. TAFT thought it a simple matter to decide. They are guilty, and must either make reparation or be expelled. Expulsion was a dreadful penalty, and he hoped they would see their way clear to make acknowledgment and promise to sin no more. To be shut out from fellowship with their brethren would be crushing to most of us.

The Society having adopted the report of the Committee, voted on expulsion first, and it failed to carry. The motion to suspend from membership was carried, and Drs. Warner and Gares were suspended until the next annual meeting, when they are to make satisfactory acknowledgment in writing, or be expelled.

DR. CHAS. E. STROUD of Sandusky, was elected to active membership.

An appropriation of \$25 each, was made to pay the Secretary and Treasurer.

The following parties passed the State Board of Dental Examiners, and were granted certificates: T. D. Rowley of Dexter City, Noble county, and E. L. Patchin of Shelby, Richland county.

The report of the Treasurer, Dr. G. W. Keeley, showed:—

Balance on hand last report.....	\$ 82 50
Receipts.....	163 00
	<hr/>
	245 50
Less Disbursements.....	226 36
	<hr/>
Leaving a balance in the treasury of.....	\$18 41

The Committees for the ensuing year:—

*Executive*—J. E. Robinson, Columbus; C. R. Butler, Cleveland; C. I. Keely, Hamilton.

*Ethics*—F. H. Rehwinkel, Chillicothe; J. F. Siddall, Oberlin; C. H. James, Cincinnati.



*Membership*—W. H. Todd, Columbus; J. R. Safford, Gallipolis; David Gibbons, Warren.

*Voluntary Essays*—E. J. Waye, Sandusky; J. W. Chance, London; Chas. Welch, Wilmington.

*Publication*—J. H. Warner, Columbus; I. Williams, New Philadelphia; G. W. Keeley, Oxford.

*Board of Dental Examiners*—President, J. Taft, Cincinnati; Secretary, F. H. Rehwinkel, Chillicothe; H. A. Smith, Cincinnati; C. R. Butler, Cleveland; I. Williams, New Philadelphia.

#### SUBJECTS FOR DISCUSSION, 1884.

1. Improvements in Artificial Dentures.
2. Affections and Treatment of the Active Organs of Mastication.
3. Therapeutics in Dental Practice.
4. The Difficulties in Filling Teeth.
5. Pathological Conditions of the Mucous Membrane of the Oral Cavity—Causes and Appropriate Treatment.
6. Food, Digestion and Nutrition in Relation to the Healthful Condition of the Teeth, and Fluids of the Mouth.
7. Histology of Dental Tissues in the Process of Development.

Adjourned to meet Wednesday, October 29, 1884.

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#### “GO WEST YOUNG MAN, AND GROW UP WITH THE COUNTRY.”

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THE following is from the *Watertown Courier*, of Southern Dakota, and was kindly furnished by Dr. F. O. Sale, of Huron. Dentists are verily gregarious animals; and it is probable no other profession or handicraft is as well organized into associations.—  
ED. JOURNAL.

#### SOUTHERN DAKOTA DENTAL ASSOCIATION.

In response to a call for a Dental Convention for Southern Dakota, at Watertown, on October 24, 1883, meeting called at Central House at 2 P. M., and a temporary organization was effected by electing Dr. W. B. Steere, of Pierre, Chairman, and Dr. F. M. Crain, of Doland, Secretary. Adjourned to meet at 7 P. M., at the office of Dr. Stutenroth.

Meeting called to order at the appointed time and place. Motion carried to effect a permanent organization of a dental society for Southern Dakota, embracing all that portion of the territory south of the 46th parallel of north latitude.

Motion made by Dr. C. W. Stutenroth, carried—that the Society be known by the name of “The Southern Dakota Dental Society.”

Motion made by Dr. James F. Martin, carried—to proceed to election of officers. The following officers were elected :—

President—C. W. Stutenroth, Watertown.

Vice President—Dr. W. B. Steere, Pierre.

Secretary—Dr. F. O. Sale, Huron.

Treasurer—Dr. F. W. Blomily, Sioux Falls.

Librarian—Dr. R. R. Buchanan, Deadwood.

Motion made by Dr. F. M. Crain, carried—that the Executive Committee shall consist of five members, three of which shall be the President, Vice President and Secretary. Dr. O. M. Huestes, Milbank, and Dr. W. H. H. Brown, Yankton, were duly elected members of the Executive Committee.

Motion carried—that Drs. Crain, Steere and Stutenroth, be a committee to draft constitution and by-laws. Motion carried—to adjourn to 10 A. M., October 25, 1883, at same place.

DR. F. M. CRAIN, *Secretary*.

Meeting called to order at 10 A. M., October 25, Dr. Stutenroth, President, Dr. James F. Martin, Secretary *pro tem*.

Minutes of last meeting read and approved.

Dr. Crain reported a constitution and by-laws. Approved and adopted.

On motion of Dr. A. McKinney, carried—that any dentists whose names appeared to the call for dental convention, or the name of any dental practitioner presented by them, residing in the area embraced in the call, may become a member of this Society, at or before the first annual meeting by paying initiation fee.

Motion carried—that the President be acting Treasurer until such time as the Treasurer elect be duly qualified.

A resolution of thanks was voted to the *News and Courier*, of Watertown, and the press generally throughout Southern Dakota for publishing call and proceedings, to the C. & N. W. and

C. M. and St. P. Railways for reduced rates, and hotels for courtesies extended to members.

Motion carried—that the first annual meeting of the Society be held in Pierre, on the second Tuesday in June, 1884.

Motion carried—to adjourn.

DR. C. W. STUTENROTH, President.

DR. JAMES F. MARTIN, Secretary *pro tem*.

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## Editor's Specials.

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“Write the Vision and make it plain.”

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### END OF THE VOLUME.

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TIME flies. At least this or a similar expression has been so often used that it has a seeming truthfulness. The past year has been the equal of any of its ordinary predecessors, yet we can make it seem long or short at will. Thinking back to our preparation of the first number of this volume, it seems but the work of yesterday. Thinking of the volume, an issue at a time, and the period seems long. Yet the twelve months are no longer than the one year. But the year is gone, and we rejoice that nothing has occurred to make our editorial work other than pleasant. To our brethren who have aided us with their pens, we express our cordial thanks. To those who are going to help us in the coming volume, we extend a cordial welcome. To all of our readers we wish health and prosperity. If our pencilings have proved useful to any, or even a source of enjoyment, we are thankful; if they have wounded the feelings of any, we are anxious to be forgiven. It affords us much pleasure to remember that nothing has been written with the slightest feeling of unkindness.

Three years ago we took up the editorial pen, long laid aside, with doubts and misgivings. We had no doubts about finding friends and sympathizers among our brethren. Our misgivings all referred to our own condition, to our own ability to discharge the duties of the situation. As far as physical strength goes, though more debilitated, we can hold the pen as steadily as then. But we are not able, nor would it be desirable if able, to do all

the writing required to make the JOURNAL such as its publishers desire to make it, and such as the profession wish to see it. This means, dear brethren, that we need, and very much desire the aid of your pens. Don't tell us you can't write; for we know you can—that is, very many of you can, many who claim inability in this line.

The JOURNAL has done much to call out new writers, and to recall into service those who had laid their pens aside. We now recall two of our contributors who have repeatedly insisted that they cannot write, while really they are the spiciest writers in our profession, as would be very generally recognized at once were we to name them. We have the promise of future help from both of them. It is our purpose to make the next volume of the JOURNAL more readable and more instructive than any of its predecessors. To do this we must have your help as contributors. We wish, as in the past, to make the JOURNAL the most nearly original of any periodical in the profession. With your help we can do it. Will you help us? Please answer in the shape of contributions, correspondence, etc.

Our publishers need no commendation. Their work speaks for itself and for them. They are punctual, and they furnish the neatest and handsomest periodical in the profession. They ought to be appreciated, and the way to show your appreciation of them is to promptly send in your subscriptions.

To our cotemporaries we return cordial thanks for the kind courtesy shown us personally and editorially. Their quotations from our JOURNAL, too, are evidence of due appreciation. We try to insert articles worthy of reproduction.

All things considered, we feel that our situation is as pleasant as it well can be under the circumstances. If we had the strength to meet with you, and thus see you face to face, our cup of enjoyment would be full. But we delight in writing to you once a month; and again we ask you to help us with your pens, and thus you can greatly increase the literary sociability of our good profession.

---

#### DIFFERENCE IN TASTE.

THE late "scientific editor" of the *New England Journal*—rather the one *lately scientific*—doesn't like "apples of gold." We do, and will accept all he has to spare. He seems to even doubt



their existence. Can it be possible he has not yet tasted our *golden* pippens and *golden* russets? True, they don't taste like spoiled cabbage, an article of diet we have often recommended, but they are good. If our lecture at Indianapolis, appearing in the September JOURNAL, is worthy to be compared to the golden russet, we are proud of it.

The lately "scientific editor" of the *New England Journal* doesn't like that lecture, either. The able Society to whom it was delivered *seemed* to like it, and that suits us better than to have the opinions reversed, if all can't like it, for we doubt if there is a member in that Society that could not teach *dental science* for a term of years to this lately "scientific editor," were it not that he might prove to be a rather dull pupil. As a specimen of this dullness, he says that we "talk of two varieties of decay," when the facts are, as is well understood by the Society, we talked of *three*, and of *corrosion*, which we said was as clearly entitled to the name as any of the other varieties. Charging this lately "scientific" individual with lack of attainments in dental science, is saying nothing against him, for he has been otherwise busy, and has never had the time and opportunity to study dental science. He is a good *reporter*, he has *studied* and practiced short-hand, and penmanship in general, and these, with the common school branches, constitute about the measure of the man. We have no fault to find with his lack of dental knowledge; but we do criticise his presumption in pretending to know more about it than any others, without having devoted time or study to it. Reading and writing may "come by nature;" but dental science does not. Some of our readers who attended the Highland House Meeting in Cincinnati, in 1882, may remember his assumptions in comparing himself with Professors Buckingham and Cassidy, the most experienced teachers of chemistry in its relations to dentistry in the world. To all appearance, he held their opinions in sovereign contempt. He had some shadow of ground for charging the writer of this with being "behind the times," in view of his ignorance of our habits and studies, but these two he knew to be active teachers of chemistry up to the date of his self-conceited assumptions. But they had not come from Germany.

Were it not that this lately "scientific" writer may not be familiar with the English language, we would think him guilty of willful misrepresentation when he charges us with trying "to

prove that experiments tried out of the mouth are the same as experiments tried in the mouth ;” but it is a truism that if any chemical agents act on each other, the result will be the same, in or out of the mouth.

When this editor was “scientific” he didn’t like fun ; but now he is so fond of it that he makes a first-class joke out of the fact that a part of our library and a valuable record of experiments were burned ; but for the life of us we don’t see where the laugh comes in. Perhaps it is a German joke ; and we do not understand German.

This same once “scientific” editor charges us, falsely or stupidly, with having “yielded a step” when we say “Both,” in answer to the question, “Acids or Germs, Which?” We have yielded many a step, but not here, as our article clearly claims that the influence of the germs, or micro-organisms, is secondary, that they have no influence whatever in beginning the process, and that in some cases, as stated by Professor J. Taft, at the last annual meeting of the Mad River Valley Society, they are absent throughout.

This editor who was once “scientific” also charges us with “a grossly chemical mistake” in claiming that hydrochloric acid dissolves bone phosphate without decomposition. It is enough to answer that the dispensatories all act in accord with our claim, in their directions how to prepare or obtain this phosphate. A standard one, now before us, says: “Take of bones, burnt and reduced to powder, one part ; diluted hydrochloric acid ; water, of each, two parts. Digest them together twelve hours, and filter the liquor ; add to this, of water of caustic ammonia as much as may be sufficient to throw down the phosphate of lime.”

How could the *phosphate* be thrown down, if already decomposed by the hydrochloric acid ?

Pereira, after directing a similar solution, says, “on addition of ammonia, the sulphosphate is precipitated.” The same author says that this bone phosphate is “soluble in nitric, hydrochloric and acetic acids, from which solutions it is thrown down, unchanged in composition, by ammonia, potash, and their carbonates.”

But our critic, no longer, though once “scientific,” claims that the bone phosphate is decomposed by such solution, and if so, it could not be thrown down unchanged.

Since our critic has ceased to be “scientific,” he regards

“bone phosphate” as something new; and we rejoice that he is glad to hear of it. To show that the idea is not new, we will quote something *old* in reference to it: In Pereira’s *Materia Medica*, edition of 1843, p. 504, vol. i., he says: “In 1769 Scheele discovered that bones contained an earthy salt composed of phosphoric acid and lime. As these two substances combine in several proportions to form phosphates, chemists distinguish the combination found in bones by the name of *Bone Phosphate*, or the subphosphate of lime.” *Chemists* so distinguish it, but those who have ceased to be “scientific” seem to know of no such distinctions.

A red handkerchief excites a male turkey half as much as the term “nascent” excites the lately “scientific.” We always thought that if the poor turkey knew the exact character of the handkerchief, he would not care for it; and we believe our critic is in a similar state with his bugbear, and so we refer him to page 422 of this same September number of the OHIO JOURNAL. The lecturer there says to his class, when he is about to pass an electric charge through a mixture of oxygen and hydrogen, “in its passage the heat developed will decompose the molecules of the gases, leaving them free to combine—or, technically, in a *nascent condition*.”

The *boys* out here understand ordinary chemical terms, and if our critic would take a course of instruction from one of them, *he* might become “scientific” again, if not too far gone. He is, however, so far gone that he doesn’t know that a chemical molecule, in its nascent state, is as concentrated as that agent can be. But how could he know, when he doesn’t know what is meant by nascent? The apostle Paul found some believers and asked if they had received the Holy Ghost. They replied they had not yet learned that there is a Holy Ghost. He soon had them enlightened, however; but they were not so self-conceited as to fancy they knew it all, or they would not have listened to him. Our critic pupil is not in similar happy state of mind. For the credit of our school we may have to drop him from our classes.

What can the lately “scientific” mean by this platitude? “Dr. Watt supposes that acetic acid can decompose carbonate of potassa. We can tell him that it does not under certain circumstances. If he does not know it, we will communicate it to him in the next number.” How gracious! Afraid we will die before

his next number appears ; and it would be sad to go to "the land of deep forgetfulness" without such important knowledge. He, no doubt, supposes iron "can decompose" nitric acid. "We can tell him that it does not under certain circumstances." But what of it?

At one place in his harangue, our critic, who was once "scientific," blames us for relying on books, and at another, he faults us for not examining them. Children are hard to please, and in ceasing to be "scientific," even he may have been converted, and have become as a little child, and so is "not far from the kingdom." But against this supposition we have his desire to *fight*. "Many readers like to see a little fighting, and he is exceedingly glad to accommodate them," he tells us in closing.

" But children you should never let  
Your angry passions rise ;  
Your little hands were never made  
To tear each others' eyes."

But if he is determined to fight, let him be fair, as he promises to be, and take something near his own size, for instance, one of the fellows he has so well described in one of his lectures, in the following words: "It is quite possible for bacteria to enter between the enamel prisms, and by nourishment upon and development in the organic matter contained in the enamel to mechanically break down and comminute the inorganic or lime structure of the tooth."

If he catches one of them doing that he has our consent to attack him at once, and show him no mercy. Breaking it down *mechanically*, indeed. Give no quarter! Be "exceedingly glad to" fight him till he agrees either to quit, or to break it down *chemically*.

There now! Perhaps that is a "saloon style of writing," as intimated by our critic, in reference to our dignified lecture. We know but little of saloons or their styles. Didn't even know that they write; but we'll not dispute with a German on this subject, as the Germans are standard authority on saloons and some other things, even though they may not always remain "scientific."

We would not spare time or space on this writer and his stuff, were it not for his artificial position which enables him to do mischief. Some Germans *are* scientific. He once pretended to be, and so announced himself. New England is a region of general



intelligence, and light is expected from it. But in the science of dentistry this region has not led the train of thought. It never had a dental journal that we know anything of till the issue of the N. E. J. National societies have been coaxed to meet in its metropolis, the members of the profession there using the argument that no other place needed so much dental missionary work. But on account of general character, a *German* editor in New England has a reputation for talent in spite of his personal shortcomings. Therefore it becomes proper to arrest his mischievous influence.

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### A PICTURE.

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WE have just received a fine photograph of Dr. John Siddall's new engine. Some of our brethren got to see it at Columbus. It looks in the picture as if it would run as true as a racehorse. We hope, and believe, as well, that it will do the work for which it is intended. Thanks for the picture, Doctor. And now after the effort necessary to get up such an invention, added to the cares of active practice, you should take a good long rest. People often work too hard.

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### EXPLANATORY.

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THIS number has been slightly delayed by the illness of the editor, the first delay of the kind since the JOURNAL was started. The prospect is that the next number will surpass in interest any of its predecessors. You can not afford to delay a renewal of your subscription.

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### RETRACTION OR CONTRADICTION.

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DR. STOCKWELL, in the November number of the *New England Journal*, says, "Dr. Watt recently stated that he does not consider me 'an original investigator or capable of becoming one.'"

We don't recollect saying anything of the kind; and if we have said it we wish to retract it. We don't know Dr. Stockwell, and of course know nothing of his attainments and capabilities. We have no data on which to found an opinion. Two of his intimate acquaintances have told us something like what we are charged with saying, but we don't know them. One is his friend, the other may be.

## Our Aftermath.

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### HUMAN PARASITES.

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IN *The Cincinnati Lancet and Clinic* Dr. George Sutton gives a partial and classified list of these troublesome companions.

The first class he mentions he calls "Microzymes," which includes micrococci, bacilli, vibrio, filaria, spirillum, and bacteria. Next he gives the "*Entozoa*," then the "*Epizoa*," and his fourth class has this suggestive heading: "*Undoubted vegetable parasites and their diseases*." Under this class he mentions "Microphytes," "Trichophyton tonsurans," "Microsporon andonini," etc. Let it be noticed that he is not willing to classify micrococci, bacilli, vibrio, spirillum and bacteria as "undoubted vegetable parasites." He encourages Prof. Wright, who in his article on "Half-breed Microorganisms," in a late number of the JOURNAL, places them on the border land lying between the two subdivisions of the organic kingdoms, doubting whether they are animal or vegetable. Of course Dr. Sutton, and every one else, will class the entozoa and epizoa as *animal*. Then his fourth class are as undoubtedly vegetable, leaving micrococci, bacteria and company to be yet determined. Possibly the "bug theory" is not a misnomer after all.

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*Editor of Ohio State Journal of Dental Science:—*

ALLOW me to correct an error which appears in your JOURNAL for November, 1883, pages 540 and 541. It is this: You and Dr. Sillito are both mistaken in regard to the passage of the first laws regulating the practice of dentistry in Alabama, and also in the world, so far as any statistics show to the contrary. Alabama claims the proud distinction of being the first State in the United States to pass a law regulating the practice of dentistry, and one of the first to enact laws regulating the practice of medicine and surgery, also. Alabama's medical and dental laws were first enacted in 1839, and were amended in 1873 and 1876. And said law has been in force ever since its passage. The law you refer to, of 1881, was only an act amending an act to regulate the practice of dentistry in the State of Alabama. The old law placed its enforcement in the hands of the Medical Associations

and County Boards of Censors; and the act of 1881 places it where it properly belongs, in the hands of the State Board of Dental Examiners of Alabama. Said Board was created by the acts of February 11, 1881. I know whereof I speak, as I was one of the Committee on Legislation. Please make the correction, and give Alabama the credit of being the first State in the United States, or of Europe, in fact, in the world, to enact a law regulating the practice of dentistry, and oblige the Alabama Dental Association.

Very respectfully,

T. M. ALLEN, D. D. S.,

Ex-Secretary of State Board of Dental Examiners, and of Alabama Dental Association, Eufaula, Alabama.

We have not the documents before us, and had entirely forgotten this early legislation in Alabama, though we feel certain that the *Dental Register* called attention to the fact some years ago. But this above is to be regarded as official information, and we cordially thank Dr. A. for the correction. And as the name "Alabama" means "here we rest," we are ready to cordially abide by the sentiment of the same.

"Rushed they to this limpid river,  
Fancied river of the blest,  
And the Chieftain cried, in transport,  
'Alabama!—*here we rest.*'

"So this river, from the language  
Which the Manitou loved best,  
Took the name of Alabama—  
'Alabama!—*here we rest.*'"

## Varieties.

BY J. E. CRAVENS., D. D. S., INDIANAPOLIS, IND.

CINCINNATI, Oct. 25, 1883.

EDITOR VARIETIES:—As bugs and things seem to be very much in fashion of late, I would like to call your attention to a discovery regarding the cause of a certain disease affecting goldfish, made some four years ago, by Mr. Hugo Mulertt of Cincinnati. It appears in his book on the Culture of the Goldfish, issued during the past summer, and in its essential points agrees with what Dr. Wright "writ" in the September number of the JOURNAL, which article, by the way, I think, is a good *resume* of bug theories generally.

### "SLIME OR ITCH."

"This disease generally appears during the colder season of the year, seldom manifesting itself when the weather is warm or hot. The body of the fish becomes coated with a layer of some whitish substance, the deposit beginning on the back near the head. This white, slimy substance, when examined under a powerful microscope, reveals a number of parasites darting about hither and thither across the field of the instrument. These minute organic bodies, technically termed *bacteria*, resemble a wood-tick in general shape. They appear to eat into the skin of the fish, destroying that structure. \* \* \* \* The cause of the disease may be found in the usual over-feeding, in which case the remnants of food remain in the water until decomposition sets in. The temperature not being favorable for the production of water-purifying insects, the *bacteria* make their appearance. \* \* \* They annoy the

fish by their presence, their attacks upon its skin, setting up an increased flow of blood to the part upon which the thick coat of slime is found."

Now, Mr. Editor, can these minute bodies be true *bacteria*? Do they belong to the animal or vegetable kingdom or are they "half-breeds?"

They originate from, or at least appear simultaneously with the decomposition of the food remaining in the water, and furthermore, develop only in *cold weather*, at least as a general thing. In the mouth of the human subject the temperature is at least 98° F., frequently more, there are also remnants of both animal and vegetable substances from the decomposition of which we would expect to find organisms of some kind as the result. The *bacteria*, or whatever you will call them, found in the aquarium, attack the fish, in fact, are quite carnivorous, but whether the organisms found in the debris of a decayed tooth do the same thing or not, I do not know, though I should like to. There may not be much interest in this little note, yet I found it so and thought that others might also, especially as we are more or less all moving around for bug news. E. G. B.

### NOTES ON HOMŒOPATHY.

Extracts from a paper by Edward Bayard, M. D.,  
Popular Science Monthly, October, 1883

"Messrs. Bell and Layard, in their admirable monograph on diarrhoea, say: 'There is indeed a somewhat prevalent opinion that the strength of the dose makes up for want of due



care or knowledge in selection. This may be stated in mathematical terms as follows: If the thirtieth potency of arsenic is equal to a complete knowledge of the drug, one-fifth of a grain of arsenious acid is equal to complete ignorance of it. Stated in this, its true form, we grant it.' \* \* \*

'What, then, is disease—typhoid, pneumonia, scarlet fever? No; disease is the impairment of the equalization of the vital force, and it finds expression where the organism is weakest.

'What is cure—to take physic for typhoid or scarlet fever? No; to cure is to locate the center of the disturbance, the diseased nerve-cell, and restore equilibrium' \* \* \*

'As there is but one nerve center of a disease, so there is but one remedy.'

\* \* \* 'If you go out into excessive cold, and the power of resistance is equal to the demand, you will turn red; if not, and this power is overwhelmed, you turn white. And the same difference is markedly observed among those who take sea-baths. By the law of reaction they vary in color from that of a boiled lobster to the livid hue of death, graduated and shaded off by the loss of the power of resistance. All cures are sought by homœopathy under this law and depend for their success upon this power of resistance, and it is of vital importance that this power be not diminished, for without it there can be no cure. Outside of medicine this law of reaction in the system is recognized as an accepted fact. It is the law of cure, and the study of this law is a science, and that science is homœopathy.

'The reason why scarlet fever, measles, chicken-pox and small-pox do not, as a general rule, recur in the system is that, at the first attack, the system has reacted so strongly against these diseases as to be proof against a second attack.' \* \* \*

'It is said that since the discovery of the *sarcoptes hominis*, or itch-insect, the dogma about psora being such a powerful factor in the causation of diseases has fallen to the ground; that is to say, that those who supported this theory have been, by this discovery, forced to abandon it. Why? Evidently because the theory is inconsistent with the itch-insect. But who proves it? Is the disease the cause of the insect, or the insect the cause of the disease?' \* \* \* 'So will psora breed the *sarcoptes hominis*, but so will not the insect breed the itch? Being but the effect, it cannot produce the cause. It is not its own *causa causans*.'

\* \* \* 'The law of nature's cure is, by rousing up reaction against disease, to restore the disturbed forces to their exact counterpoise, where action and reaction are equal.'

\* \* \* 'By operation of the will, a strong man liberates from a nerve-center of his brain, nerve-energy, which, acting along the motor nerves, liberates in its turn sufficient muscular energy to fell an ox. Here the immaterial—the will—has produced a most powerful material result. Suppose for a moment that the nerve energy had been misdirected, as in case of shock from mental causes, and had all been expended within the man, who would answer for the result?

'In the heroic struggle which nature, unaided, makes against disease, the assistance from art necessary to speed the cure may in a great majority of cases be set down in decimals as follows:—

Nature,	-	-	-	-	-	.999
Art,	-	-	-	-	-	.001

'Nature, unaided, in a vast number of cases, successfully resists those diseases which are attributable, by those who maintain the germ theory in disease, to atomic germs. The numbe

of disease-germs does not matter, as is evidenced by the communication of disease by letter where the number must necessarily be limited.

“ \* \* The atomic dose but excites in a greater degree those powers of reaction and resistance of nature already set in motion by disease?—which is a disturbing cause. Nature always seeks to restore the equilibrium of her forces.”

### MISSISSIPPI VALLEY DENTAL ASSOCIATION.

There is a loud call for an effort to rejuvenate the Mississippi Valley Dental Association. Time was when the Mississippi Valley was recognized as the leading association of dentists in the United States, and great value was placed on her transactions. Is it not possible to lift her up again? It is not necessary to infuse new material into the membership to accomplish this, but let us all get to work and try to induce renewed attendance by a number of good men who have kept aloof for several years. Get Dr. C. R. Butler, of Cleveland, to come and bring back Northern Ohio with him.

We could name a dozen dentists of Ohio, half as many each of Pennsylvania, of Kentucky, of Indiana, and of Illinois and Michigan, who, by their presence next March, could render the old Mississippi Valley Association a head taller than the American Dental Association has been for ten years.

Brethren, let us all promise to be on hand the opening day of the meeting, the first Wednesday of March next. How many will so promise?

*Provided*, That the Ohio Dental College Alumni Association will agree to hold its meetings before or after the Mississippi Valley Association meetings; and,

*Provided*, That the Mississippi Valley Association can have the use of bright, cleanly, cheerful rooms for its

meetings, on some convenient street, instead of an abominable alley. There are many lovers of the old Mississippi Valley Association who would be delighted to see her smile again, washed of her many years accumulation of coal smut and cobwebs.

We invite every dentist who will promise to attend the next meeting of the Mississippi Valley Dental Association, subject to the conditions before named, to send us his address, and we agree to publish the list in the February number of this journal.—ED. VARIETIES.

### SOUTHERN DENTAL JOURNAL.

As will be seen by a correspondence in this issue of the JOURNAL, we have induced our talented contributor, Mrs. M. W. J., to embody her views on “Overcoming Heredity, and Advice to Mothers” in a series of letters to appear successively in the JOURNAL. They will be compiled in book form for office distribution to mothers—teaching them the very great importance of caring for their own and their children’s teeth. Its style will be comprehensive—teaching plain facts in plain language. If we are to judge by the manuscript in hand, the book will supply the profession just what it has been wanting for years. We all see the importance of instructing our patients in this matter, but often neglect it for want of suitable opportunity and time; and also because it is a delicate matter to touch upon, and we desist for fear of wounding sensibilities.

The forthcoming book will, we think, be a decided improvement over preceding efforts in the same direction, in that, coming from a *non-professional* it will be free from the technicalities it is almost impossible for a professional writer to avoid; and that, coming from a mother, we can reach mothers with it, as has never been done before.

We are assured by the publishers that the price will be within reach of

all, and feel that, with all its advantages, it will find its way into every dental office of the land, and be scattered forth to do its mission of love.

The book above referred to, will certainly be a valuable acquisition to dental literature, particularly for home-circle use. The *Varieties* cordially wishes Mrs. W. M. J., full success in this enterprise.—Ed.

#### A POINT FOR THE RUBBER WORKER.

ED. VARIETIES:—It takes even a stretch of the imagination to measure the products of the million acres of rich gutta-percha forest in Dutch Guiana, which are about to be worked by a company of Boston capitalists.

#### ANOTHER FOR THE PHYSIOLOGIST.

Sir William Thomson, Mathematics Professor in the University of Glasgow, broaches the idea of the seventh or magnetic sense in addition to those of sight, hearing, taste, smell, heat and force. But there is already a seventh sense, which is, however, possessed but by few; and it is horse sense.

And last, but not least, a few ideas upon the origin of bugs and things, together with valuable hints upon dietetics, the reason for the prevalence of dyspepsia and dental caries, all culled from the omniverous "daily paper."

The favorite diet of the Briton is beef and beer; of the Frenchman, frogs and fatted quail; of the German, boiled sausage, saurkraut, and beer soup; of the Hawaiian, beans, red pepper and live cuttle-fish; of the Greenlander, boiled whaleskin, and the half digested contents of the reindeer's paunch; of the Australian, garter snakes. Americans like anything that is good to eat. E. G. B.

P. S. We neglected to mention in our list of National dishes yesterday the German favorite, saucisssenkartoffelbreisauerkrautkranzwurst.

#### A JOURNALISTIC SCOOP.

The Southern Dental *Journal* is entitled to credit of a valuable scoop in securing so excellent a lady contributor as Mrs. M. W. J. Her articles are neatly written, and contain an unusual amount of information, suitable for mothers, enabling them to devote well directed care to the teeth of their children. The *Varieties* columns are open to some lady who has the ability and inclination to contribute articles pertaining to the teeth. A cordial invitation is extended.

Mrs. M. W. J. has certainly acquired an enviable reputation as a contributor, and in a very short time. Let some lady of the Ohio Valley try her pen through the willing columns of varieties.—Ed.

#### AQUEOUS SHELLAC VARNISH.

Saturated solution of borax, 2 parts.  
Powdered shellac, 1 part.

Shake together without heat. The shellac will dissolve in two or three days.

This can be used for a starch gloss also.—*Pharm. Centralhalle.*

#### CORN, WART AND BUNION CURE.

Mix  $3\frac{1}{2}$  fluid ounces of alcohol with  $12\frac{1}{2}$  fluid ounces of sulphuric ether, and in this dissolve 200 grains of gun-cotton (pyroxylin). This will require a day or two for solution, and then add 2 oz. (avoir.) of salicylic acid, and when this is dissolved, add 1 oz. (avoir.) of chloride of zinc. Keep it tightly stoppered, and away from light and fire.

#### THE FORMULARY.

The above should be applied to the corn or whatever is to be removed, and no more, as it will kill the skin where ever applied. It is a good thing, and an infallible cure.—[Ed.]



in your Subscription for 1883.

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OF

## DENTAL SCIENCE.

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EDITED BY

GEORGE WATT, M. D., D. D. S.,

XENIA, OHIO.

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Liquid Nitrous Oxide—H. D. Justi.....	52	Williams, R. S.—Gold .....	27
Lukens & Whittington.....	36	Watling's Pluggers .....	48
Magnifique Modeling Composition—H. D. Justi .....	55	Watt's Improved Metal.....	9
		Watt's Molding Flask .....	9

# SECOND-HAND GOODS.

## CHAIRS.

One Archer No. 2 Open Arm Dental Chair, maroon plush, as good as new,	\$50.00
One Archer, No. 2, Dental Chair, with Footstool, in good order, for	40.00
One Student Morrison Chair, good order,	80.00
One Harris Low Base Chair,	65.00
Other second-hand Chairs coming in every month.	

## DENTAL ENGINES.

Three Morrison Dental Engines, each	18.00
Same with New Hodge or No. 2 Johnston Handpiece, for	25.00
One Johnston Bros. Suspension Engine, used but little,	35.00
One Electric Dental Mallet. Write for discription and price	

## REFILLING GAS CYLINDERS.

Cylinder Filled, 100 gallons, for	5.00
" " 500 " "	20.00

[Hereafter we pay no Freight or Express.]

**RANSOM & RANDOLPH, Toledo, O.**

## DENTAL APRON OR BIB.

(Patented April 20, 1875, by R. HORTON, D.D.S.)

The above useful article is having a large sale and giving entire satisfaction, supplying

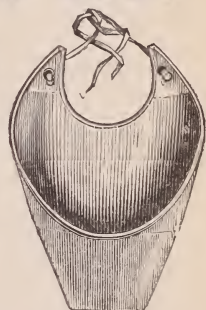
**A Want Long Felt by Many Operators.**

Made with wire frame. It is held in position better if the tape is tied on top of the head.

MANUFACTURED ONLY BY

**RANSOM & RANDOLPH,**

Sent by mail on receipt of the Price, \$1.00.



## Rubber Dam.

We have arranged with the manufacturer to receive, every two weeks, a fresh lot of the **Black Rubber Dam**, which is very far superior to that usually sold in the market. Try it, and you will use no other.

### PRICE:

Thin, per yard,	- - - - -	\$1.00
Medium, per yard,	- - - - -	1.50
Heavy, per yard,	- - - - -	2.00

Sent by mail on receipt of price.

**RANSOM & RANDOLPH.**

# ATTENTION.

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**Wanted.**—A situation as Assistant by a man, a fine operator and a fine worker of rubber and metal plates. Will work reasonable. References given. Address, "Dentist," care of Ransom & Randolph, Toledo, Ohio.

---

**For Sale.**—An old established practice in Southwestern Pennsylvania, in town of eight thousand. Offices well furnished and all instruments necessary. Business last year \$4,000. Only those who mean business need write. Address "Felix," care Ransom & Randolph, Toledo, Ohio.

---

**For Sale.**—Practice worth \$3,000 per year. Price, \$700, or will take good man as associate. Address "Partner," care of Ransom & Randolph, Toledo, Ohio.

---

**Wanted.**—A young Graduate as Assistant in a Dental office; must be of good address, and a fair workman at both the chair and in the laboratory. Address "C. H. B.," care Ransom & Randolph, Toledo, Ohio.

---

**For Sale.**—Good traveling practice, located in Southwestern Missouri. Good reasons for selling. Address C. A. Badgley, Greenfield, Mo.

---

**For Sale.**—A well established practice in Northern New York. Satisfactory reasons given for selling. Address "D. D. S.," care Ransom & Randolph, Toledo, Ohio.

---

**For Sale.**—One S. S. W. Screw Chair, green plush cover, with nickel-plated Spittoon and Crane; cost \$195.00, all in good order, for \$100. Address Ransom & Randolph, Toledo.

---

## OCCIDENTAL GOLD FOIL,

NON-COHESIVE, OR SOFT, SEMI-COHESIVE, COHESIVE,

IN ALL NUMBERS.

PRICES: \$30.00 per ounce. \$15.00 per ½ ounce. \$4.00 per ¼ ounce.

*For Sale by RANSOM & RANDOLPH, Toledo, O.*

# Reduced Prices.

## CORUNDUM WHEELS.

No.	00	$\frac{1}{4}$ in.	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.	1 in.
		\$ 06					
"	0	07					
"	1	10	\$ 12	\$ 15	\$ 17	\$ 20	\$ 30
"	2	14	15	17	20	25	35
"	3	18	20	25	30	35	40
"	4	22	25	30	35	40	50
"	5	26	30	40	45	50	60
"	6	35	45	50	60	70	85
"	7	50	60	70	85	1 00	1 30
"	8	85	1 10	1 30	1 50	1 75	2 25
"	9	1 25	1 50	1 80	2 25	2 70	3 50
"	10	2 00	2 50	3 00	3 25	3 50	4 50
"	11	2 75	3 50	4 25	5 00	5 75	6 25
Articulating Wheels						30 cents each.	

## EXTRACTING FORCEPS.

		Crocus polished.	Nickel plated.
		—Per Pair—	
S. S. White's extra quality, all Nos. except 29, 30, 62, 66, 67		\$3 00	\$3 25
" " " Nos. 29, 30, 62		2 75	3 00
" " " " 66, 67		3 50	3 75
" " " Harris's "Fac Simile"		3 00	3 25
" " " Dubs's Screw Forceps		5 50	5 75
" " " Hullihen's Screw Forceps		4 00	4 25
		Polished.	
" Plain-line, all Nos. except 29, 30, 62, 66, 67		2 50	2 75
" " " Nos. 29, 30, 62		2 25	2 50
" " " " 66, 67		3 00	3 25
" " " "College" (Baltimore and Philadelphia patterns)		2 50	2 75

This is a reduction of 25 cents per pair on all Nickel-plated Forceps, and from 10 to 15 cents per pair on Plain-line and "College" Polished Forceps.

## RUBBER DAM CLAMP FORCEPS.

	Crocus-polished.	Nickel plated.
Bowman-Allan, Elliott, and Palmer patterns	3 00	3 25

This is a reduction of 25 cents per pair on the Nickel-plated.

## RUBBER DAM PUNCH FORCEPS.

	Crocus-polished.	Nickel plated.
Ainsworth's Rubber Dam Punch Forceps	3 25	3 50

This is an advance of 25 cents per pair on the Crocus-polished.

## WEDGE CUTTERS.

	Crocus-polished.	Nickel plated.
S. S. White's, Morrison's, and Miller's patterns	3 00	3 25

This is a reduction of 25 cents per pair on the Nickel-plated.



### GAS APPARATUS.

Surgeon's Case, No. 1, complete,	\$40 00
“ “ “ 2,	42 00
“ “ “ 3, (Upright), complete,	40 00
“ “ “ 4,	42 00
“ “ “ 5,	34 00
“ “ “ 6,	36 00
Nickel-plated Gasometer and Stand, complete, with 500-gallon Cylinder (filled), Tubing, Inhaler, etc.,	180 00
Japanned Gasometer and Stand, complete, with 500-gallon Cylinder (filled), Tubing, Inhaler, etc.,	140 00

### PARTS OF GAS APPARATUS.

Morocco Case, Velvet-lined, Nickel-plated Mountings,	10 00
Upright “ Leather-covered, “	10 00
“ “ Japanned, Nickel-plated Mountings	5 00
Gas-Bag, 4½ gallons capacity,	2 50
“ “ 7 “	4 00
Stand for 100-gallon Cylinder,	4 50
“ “ 500 “	7 00

### GAS.

Cylinder, with 100 gallons of Gas,	15 00
“ “ 500 “	42 00
Refilling 100-gallon Cylinder,	5 00
“ 500 “ 4 cents per gallon,	say 20 00

*or we pay no freight or express on Cylinders either way.*

### BILL HEADS.

No. 1, as per cut page 364 of 1876 Catalogue,	per 100 \$0 60
No. 2, “ “ “ 365 “ “	“ “ 40
No. 3, “ “ “ 366 “ “	“ “ 60
No. 4, with Pettit's diagram,	“ “ 60

Arrington's Amalgam,	per oz.	\$3 00
“ “	2 ozs.	5 50
“ “	4 “	10 00
Japanese Bibulous Paper,	per 100 sheets	50
“ “	“ 500 “	2 00
Glass Lamps, Nos. 1 and 2, with Nickel-plated Top,	each	40
S. S. White's Laboratory Gas-burner,	“	1 00
“ “ Modelling Composition,	per lb.	1 25
“ “ Nickel-plated Spittoon, No. 3,	each	4 50
“ “ “ “ No. 5,	“	1 50
File-Carriers, Bayonet-shape, Steel, Nickel-plated,	“	2 00

### THE S. S. WHITE DENTAL MANUFACTURING CO.

Lawrence's Amalgam,	See page 36
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ALL OF THE ABOVE GOODS FOR SALE AT THE REDUCED PRICES

—BY—

RANSOM & RANDOLPH, Toledo, O.

Snow & Lewis's Automatic Plugger,			\$10 00	formerly	\$12 00
No. 1 Whitney Vulcanizer	} Gas or Alcohol.	{	12 00	"	15 00
No. 2 " "			14 00	"	16 00
No. 3 " "			16 00	"	17 00
No. 1 " "	} Kerosene.	{	13 25	"	16 25
No. 2 " "			15 25	"	17 25
No. 3 " "			17 25	"	18 25
No. 1 Hayes Vulcanizer, copper,	} Gas or Alcohol.	{	12 00	"	15 00
No. 2 " " "			14 00	"	16 00
No. 3 " " "			16 00	"	17 00
No. 1 " " "	} Kerosene.	{	13 25	"	16 25
No. 2 " " "			15 25	"	17 25
No. 3 " " "			17 25	"	18 25
Peer Vulcanizer,			14 00	"	16 00

All Vulcanizers not mentioned above remain at the same prices as heretofore.

## BUFFALO DENTAL MANUFACTURING CO.

All of the above goods for sale at the reduced prices by

# *RANSOM & RANDOLPH*

TOLEDO, - - - OHIO.

## SOMETHING NEW.

### *FLETCHER'S*

# Gutta Percha Hydraulic Cement

It is well known that gutta percha is not absolutely water-tight through its substance. A trace of moisture penetrates in time through all. I have utilized this property by mixing with the gutta percha, instead of the usual inert powders, a strong hydraulic cement, which gradually hardens throughout the substance, rendering the filling hard and preventing the movement which invariably takes place with the usual forms of gutta percha.

It is free from air bubbles, packing dead and solid in its place without stickiness. It finishes well and hardens rapidly. Perfect adhesion and moisture tightness to the walls of the cavity may be obtained by wiping the cavity out with a ball of cotton wool moistened with Copal Ether Varnish. Carefully used, it will be found, where not exposed to wear from mastication, one of the most satisfactory of all white fillings.

Samples of the above were obtained in England by some American dentists who attended the International Medical Congress, and as far as heard from they are pleased with this form of gutta percha.

PRICE PER CAKE, - - - - - \$1.25

FOR SALE BY ALL DENTAL DEPOTS.

JAMES V. LEWIS,

No. 5 South Division St., Buffalo, N. Y.

For Sale by *RANSOM & RANDOLPH, Toledo, Ohio.*

# H. D. JUSTI'S New Molds of Celluloid Teeth



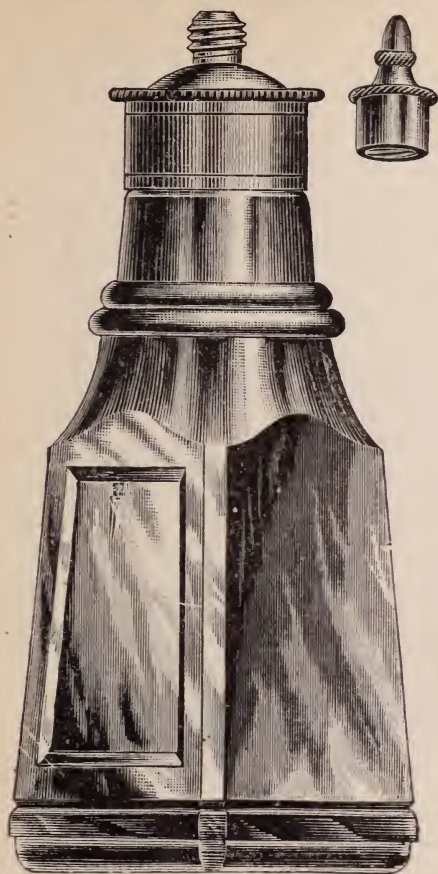
Above we give cuts of a few new molds of celluloid teeth. We have 25 different sizes of upper sets, with lower sets to match. Others will be added. It is impossible to do justice to the fine forms or to convey by cuts any idea of the superior shading wherein these teeth surpass any before in the market.

Send for sample set. 10c. per tooth. Discount for quantity.

FOR SALE BY RANSOM & RANDOLPH,

TOLEDO, OHIO.

# BOTTLES FOR TOOTH POWDER.



## Double Metallic Top TOOTH POWDER BOTTLE

New and Beautiful Pattern,

—MADE OF—

### Best Quality of Glass,

IN THREE COLORS,

FLINT, BLUE, AMBER,  
WITH CORK JOINTS.

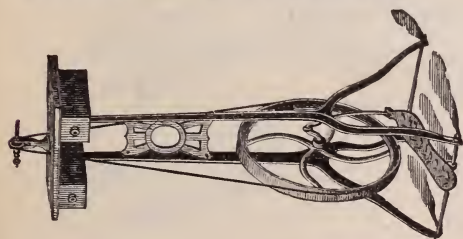
Making them Air-Tight.

One pound of Powder fills a  
dozen bottles. Put up in  
boxes of half a  
dozen each.

**\$1.25 PER DOZ.**

Filled with Geer's Phenol Dentrifice,  
Stamped and Labeled, **\$3.00** per doz.

**Ransom & Randolph,**  
TOLEDO, OHIO.



## THE HOWE LATHE

(See cut) is a

Light-Running Lathe,

WITH A LARGE

Fly Wheel 17 Inches in  
Diameter.

*Height to Top of Table, 39 Inches.*

*Weight, 42 Pounds.*

**Price, Twelve Dollars.**

*For Sale by RANSOM & RANDOLPH, Toledo, Ohio.*



RANSOM & RANDOLPH,

—MANUFACTURERS OF—

## Soft & Cohesive Gold Foil

We can now supply a Uniform and Reliable Foil, and we think the best in the market, and could give a large number of testimonials from prominent men in the profession, all of which recommend it in the highest terms. Our Soft Foil is

**EXTREMELY TOUGH**

and can be brought to any degree of cohesion by being annealed. We aim to furnish the Best Gold in the Market, and at as low a price as possible for a good, reliable foil.

Price 1-8 ounce \$3.75. One ounce \$28.00.

POSTAGE FREE.

**RANSOM & RANDOLPH,**  
**TOLEDO, OHIO**

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## IMPROVED SOFT GOLD FOIL.

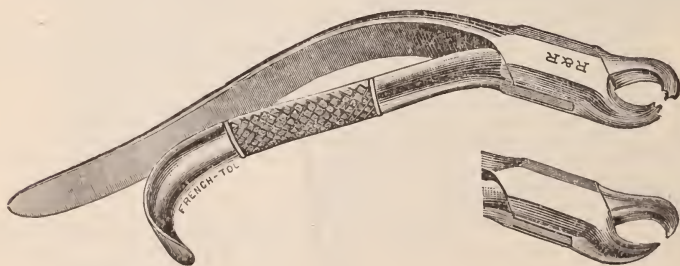
Price, \$3.75 per 1-8th. \$28.00 per Ounce.

It has a peculiar softness not obtainable to so great a degree in any other. Do not fail to try it.

Address **RANSOM & RANDOLPH,**  
**TOLEDO, OHIO.**

---

## WATLING'S FORCEPS



Prof. J. A. Watling's Universal Lower Molar Forcep.

Also a Full Line of Tooth Forceps.

Best Quality Octagon Joint (Nickel Plated), - - - \$2.50

**RANSOM & RANDOLPH, Toledo, O.**

SAMPLE SHEET OF OUR NEW  
MECHANICAL DENTAL REGISTER.

A Book of 170 sheets like this, giving space for 1,190 accounts, bound in leather with bands and ends. Price \$3.00.

EXPLANATIONS:








At the left hand of the page give date, with name and residence, marking out on the cut teeth extracted, and under remarks, the time that patient is to return for plate, and follow it with credit of amount paid for extracting. The right hand page is for date; when plate is made, the kind of material used, number of the mold of teeth, shade, name of the manufacturer of the teeth. Blank for memoranda, amount of bill, and column for credit of bill when paid. This Register of all mechanical work will be found of great value to any dentist, and especially when plates are brought back for repairs.

—PUBLISHED BY—

RANSOM & RANDOLPH,

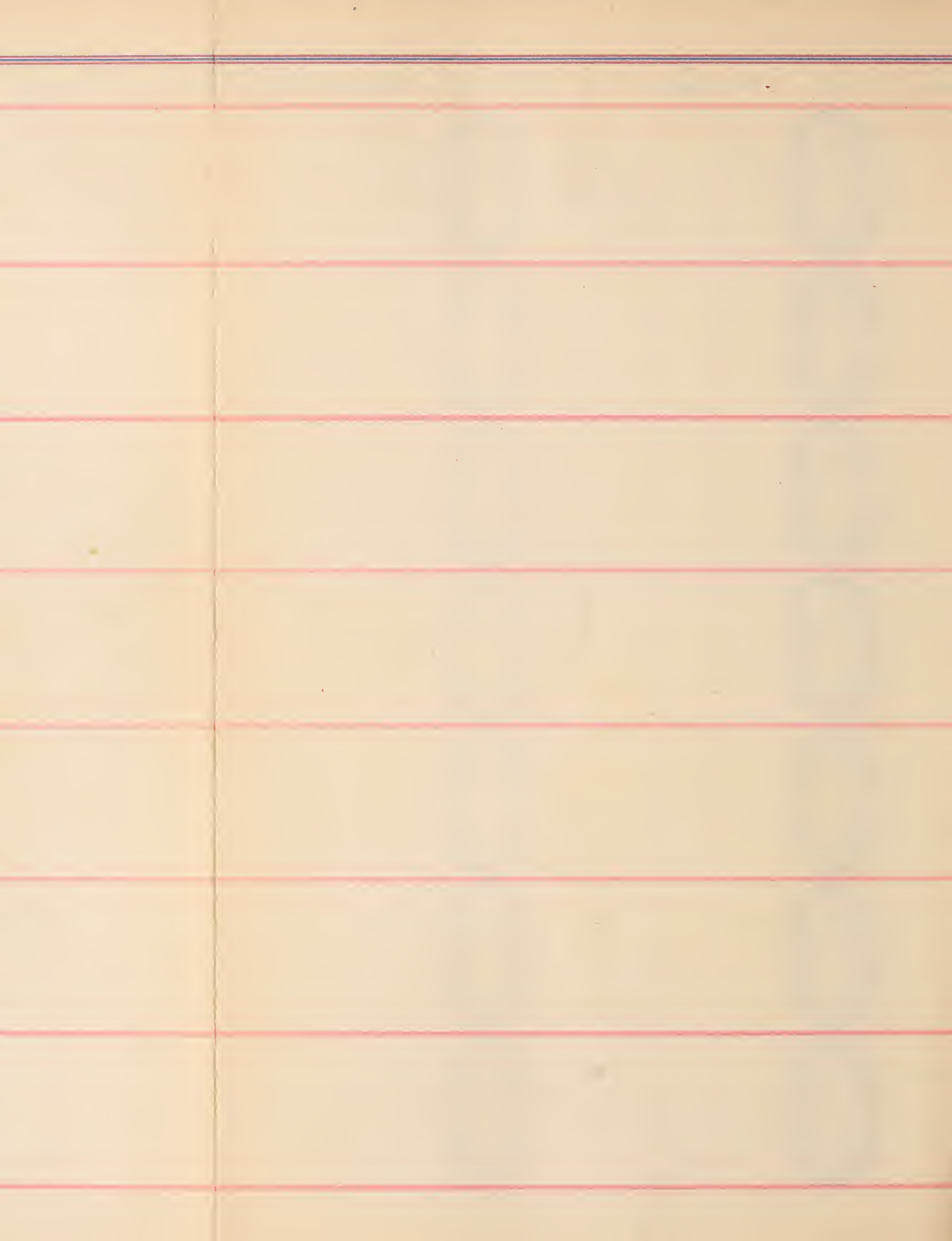
DENTAL DEPOT

83 Jefferson St., TOLEDO, O.

DATE.	NAME AND RESIDENCE.	No. of Teeth Extracted.	REMARKS.	\$	cts
					
					
					
					
					
					
					

[illegible]





# WATT'S IMPROVED METAL.

BETTER THAN ANY IN USE!

Six Ingots to the Pound.

Per Ingot, \$1.00.

Printed Instructions with each Ingot.

This metal is far superior to the well known Watt & Williams metal. It is the result of diligent research, aided by abundant leisure, and long experience in the science of metallurgy.

Watt's Metal is stronger and runs sharper than any in use, while it withstands chemical action within the mouth better than 18 carat gold.

It has no equal for lower plates, gives a much better fit than rubber, celluloid, or gold, and is a good conductor of heat and electricity. Weight is often advantageous; but if shrinkage is very great, a base plate of the metal may be made, and the teeth attached to it with rubber or celluloid. Most beautiful upper or lower dentures may be thus made, and no other work has greater durability.

Molds may be made in almost any flask, but a glance at the cut of the Watt Flask will persuade any one to buy it who intends to use the work.

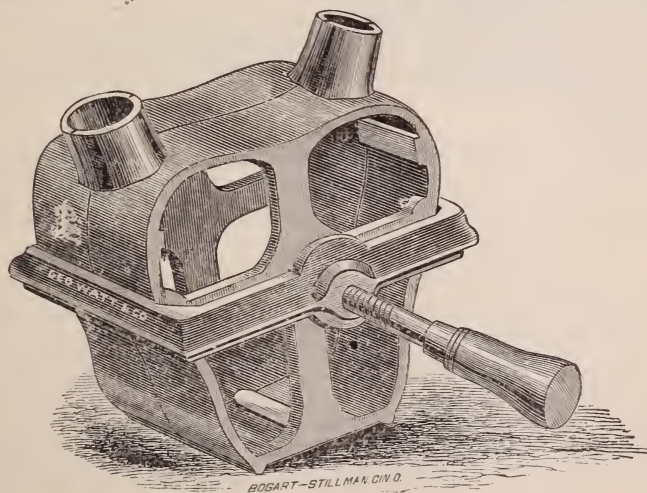
Ask your Dental Depot for it, or send to

RANSOM & RANDOLPH, Wholesale Agents,

83 Jefferson Street,

TOLEDO, OHIO.

## WATT'S MOLDING FLASK



PRICE, COMPLETE \$1.00.

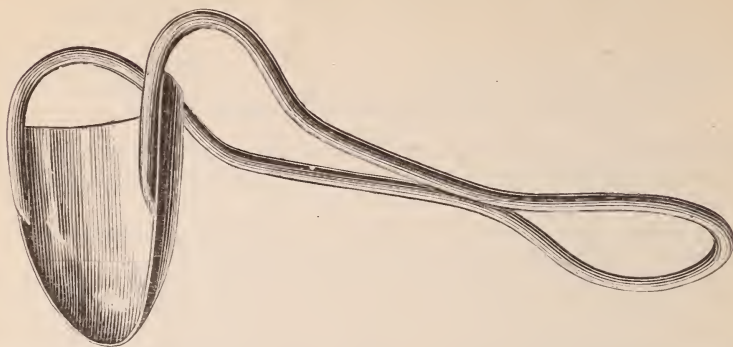
Manufactured and for Sale by RANSOM & RANDOLPH,

TRADE SUPPLIED.

TOLEDO, OHIO.

# Cheek Holder and Disk Protector.

Invention of Dr. G. V. BLACK, Jacksonville, Ill.

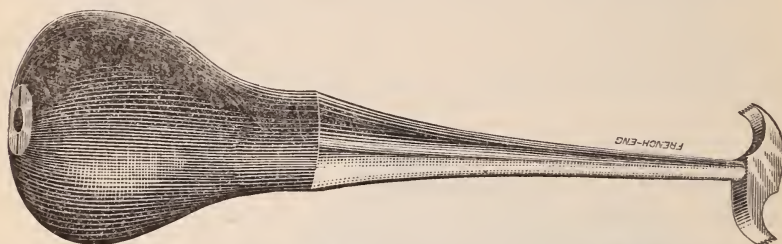


Made of metal highly polished and nickel-plated. It acts as a reflector while holding back the cheek and affording room for running a disk in separately between bicuspid and molars. Made in three sizes, small medium and large, each **75 Cents**.

*Manufactured by RANSOM & RANDOLPH, Toledo, O.*

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## WATTS' ELEVATOR.



**Price, Nickel-Plated, \$1.50.**  
Manufactured by **RANSOM & RANDOLPH, Toledo, Ohio.**

---

## PHOSPHATE OF ZINC.

WE wish to call the attention of the members of the profession to a new and superior PHOSPHATE OF ZINC. Knowing that the great trouble always has been to get a Cement Filling that would not shrink or expand, nor disintegrate when the acids of the mouth come in contact with it; it is with pleasure that we offer one, which we claim does not shrink or expand, and on which the acids of the mouth have no apparent effect. This is a non-conductor and non-irritant. This hardest of all Cements will be found useful to persons who wish to make a success of what is known as the Dents Sans Plaque (teeth without a plate) system, the ends of the bar or points can be readily forced into the root to a great distance, and held there by using a little of this Cement, around the point or properly shaped head. **Price, \$1.50.** Prepared by DR. H. M. CHRISTY & Co., 1205 Chestnut street, Philadelphia, Pa.

For Sale at all Dental Depots, and by **RANSOM & RANDOLPH, Toledo, O.**

# KING'S OCCIDENTAL AMALGAM.

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PRICE REDUCED TO \$3.00 PER OZ.

5 oz. at one time, \$2.75 per oz. 10 oz. at one time, \$2.50 per oz.

---

This Amalgam has been before the profession in Ohio and Western Pennsylvania for some years, and all who have used or tested it, agree that it has merits over any other Amalgam in the market.

The process of manufacture differs from that of other Amalgams, and

## BY A NEW INVENTION

Dr. King is enabled to obtain better results, both in regard to COLOR, SHRINKAGE and EXPANSION, than is obtained in any other alloy in the market.

Test for color consists of sixty grains of Sulphuret of Potassa, dissolved in one ounce of water. Amalgam plugs to be left in this solution twenty-four hours or more. The Occidental will remain bright after this test, and we know of no other Amalgam, at even double the price, but that will discolor. All who would use the best should buy

# KING'S OCCIDENTAL AMALGAM.

---

## TESTIMONIALS.

PITTSBURGH, September 22, 1881.  
I believe the Occidental Amalgam has *no equal* in the market to-day.

GALE FRENCH, D. D. S.

PITTSBURGH, September 22, 1881.  
I think the Occidental Amalgam superior to any I ever used.

J. G. TEMPLETON, D. D. S.

ATLANTA, GA., May 5, 1882.  
I have used the Occidental Amalgam in my practice and find it superior to any Amalgam I have ever used.

JOHN S. THOMPSON.

ATLANTA, GA., May 1, 1882.  
I use the Occidental Amalgam *exclusively* where that class of filling is required.

W. G. BROWNE.

ATLANTA, GA., May 4, 1882.  
The Occidental Amalgam is superior to anything I have ever used in the Amalgam line.

S. G. HOLLAND.

ATLANTA, GA., May 3, 1882.  
I use the Occidental Amalgam with very gratifying results. Prefer it to any other.

J. A. LINK.

NEWCASTLE, PA., November, 1881.  
DR. C. KING:—I have used your Amalgam for three years, and have no hesitancy in saying it is the best in the market.

Yours, &c.,

G. W. GREENE.

I use no other than King's. I think it best.

NEW WILMINGTON, PA, October 6, 1881.

W. E. VAN ORSDEL, D. D. S.

ASK YOUR DENTAL DEPOT FOR IT, OR SEND TO

*RANSOM & RANDOLPH, Wholesale Agents,*

83 JEFFERSON ST., TOLEDO, OHIO.



# Caulk's Filling Materials.

## CAULK'S PAR-EXCELLENCE ALLOY.

(GOLD AND PLATINA.)

With one exception we were the first to manufacture an amalgam containing Gold and Platinum, although we did not call it such—simply our trade name PAR-EXCELLENCE ALLOY; which fully expresses the superiority of this combination of metals over others. It has always contained the requisite quantity of these precious metals in conjunction with Silver and Tin, mixed upon scientific principles in their proper chemical relations to each other to make it just what it has long since proven to be,—the best alloy for filling teeth in the market. The large and increasing sales during past few years have conclusively demonstrated this fact.

It is the result of a long series of experiments, has been in constant use for several years and SAVES teeth, where others fail. By our new method of manufacture there is, no *guesswork*, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

Price	per ounce,	\$3.00.
"	per one-half ounce,	1.50.
"	per one-third ounce,	1.00.
"	two ounces for	5 00

## CAULK'S WHITE ALLOY.

FOR INCISOR TEETH.

This alloy is made expressly for front teeth, is of a peculiar grayish-white color, which will retain its brightness under all circumstances. Price same as Par-Excellence Alloy. Two ounces, one of each, for \$5.00.

## CAULK'S DIAMOND POINT STOPPING.

This form of gutta-percha, having been in the market for several years, has stood the greatest test of all—that of time. It is regarded as the best preparation of its kind for filling teeth in the world.

As now made, it is much tougher, of finer texture, and requires no more heat to soften it. It possesses all the desirable qualities necessary for a filling material of this character, viz., toughness, hardness, durability, plasticity, uniformity, and cohesiveness.

The stopping is put up in *sealed envelopes*, and the Pellets and Cylinders in *sealed boxes*, each bearing a fac-simile of our signature.

Price, in  $\frac{1}{8}$ ,  $\frac{1}{4}$ , and  $\frac{1}{2}$  ounce packages, . . . per ounce, \$4.00.

## CAULK'S HYDRAULIC PEBBLES.

This Cement differs from others, it being in the form of pebbles or granules. It is a chemical combination of some of the constituents of the Natural Tooth, and when properly manipulated has the bony-like characteristics of such material. It is harder, tougher, and stronger, resists the fluids of the mouth to a greater degree, and after *one year's trial* is more of an *insoluble compound* than most cements have proved to be.

Its *hydraulic* qualities render it invaluable for setting pivot teeth. It is so pliable that it can be moulded or shaped into various forms, and when crystallization is complete, can be carved and polished, same as the sculptor does his marble.

Price, large package	\$3.00
" small	1.50


We make a specialty of manufacturing these materials for filling teeth.

They are standard and reliable, used and endorsed by the profession generally. They have won upon their merits, and the constantly increasing demand attest their superiority and excellence.

If your dealer or agent does not have these materials send your order to our address and it will receive prompt attention.

**L. D. CAULK.**

Manufacturer and Proprietor, Camden, Delaware.

 SOLD AT ALL DENTAL DEPOTS.

For Sale by **RANSOM & RANEOLPH, Toledo.**

# Caulk's Filling Materials.

## CAULK'S DIAMOND CEMENT.

**This Compound now Stands without a Rival. From Two to Four Year's Test by Leading Dentists throughout the World has Proved it to be all that has been Claimed for It.**

It has met with a very large sale during the past three years, and the demand for it increases. It differs very materially from the Phosphate Cements, being a step in advance of them. It is easily manipulated, yet hardens rapidly, and receives a very fine polish. For pivoting teeth it has been highly recommended, is non-irritating, non-conducting, in harmony with tooth structure, has no shrinkage or expansion, and excellent for lining cavities and capping pulps.

Fillings that have been standing in the mouth *over* three years, in comparison with other plastic material in the market, show not only its **SUPERIORITY**, but it has proved to be *more insoluble* than many of the so-called insoluble cements.

We have increased the quantity fully one-third, and all bottles will be lettered with "CAULK'S DIAMOND CEMENT." This Cement can be made in all shades and colors.

Price, (two colors) gray and yellow . . . . . per package, \$2.00.

" (two colors) gray, yellow, medium, light . . . . . 1.00.

### A Few Reports After Three Years Use.

HOLMESTEAD, PA., August 7, 1882.

Having used your Filling Materials for several years, I can say that I am much pleased with them. When properly manipulated they are sure to give satisfaction, but it requires some skill and experience in their use to obtain the best results. For very sensitive and badly decayed teeth, the "Diamond Cement" and "Hydraulic Pebbles" are excellent, they are indispensable in my office, many aching teeth having been saved by their use, to the great joy of my patients.

J. B. WILLIAMS.

NORRISTOWN, PA., August 8, 1882.

I have been using your Diamond Cement for **THREE YEARS** and think it *superior* to any other in use.

BENTON MALONEY.

NEW ORLEANS, LA., July 3, 1882.

We have been using your Diamond Cement nearly *two years*, and are more than pleased with it. Having built up shells of teeth, and used it in many cases where we would have been unable to accomplish as good work with other white fillings. It requires a little practice, however, in the mixing to get the right proportions, but when *properly mixed* we have found it *harder* and more *durable* than any other cement used by us.

F. H. KNAPP & SON.

CINCINNATI, October 18, 1881.

I am using your preparation in my private practice and regard them as most excellent plastics. The use of your filling materials in the Infirmary of the Ohio College of Dental Surgery has also given good satisfaction, both as to their working qualities and durability. We are pleased to recommend them to the profession.

H. A. SMITH.

INDIANAPOLIS, IND., October 18, 1882.

I tried a sample of your Diamond Cement about two years ago, and must say that it was highly satisfactory in all respects. For ordinary purposes of plastic stopping for cavities, such as temporary fillings and substitute for dentine in supporting frail enamel, it certainly has no superior according to my experience.

JUNIUS E. CRAVENS.

CLEVELAND, OHIO, November 26, 1882.

I like Caulk's Diamond Cement for temporary fillings and to put in cavities for a base to build gold upon, and to protect the pulp from thermal changes, better than any of the other cements I have used. It is *easier to work*, and is *more dense* than any other I have ever met with.

D. R. JENNINGS.

Drs. Jennings & Bell, of Cleveland, Ohio, prefer Caulk's Diamond Cement for mounting artificial crowns upon natural roots.—[Transactions Ohio State Dental Society for 1882.]

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Flattened.



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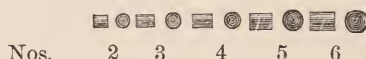
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Loose, but more compact than Style A.



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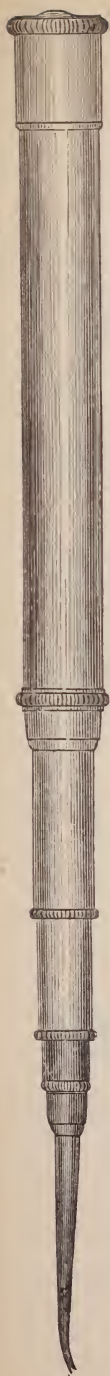
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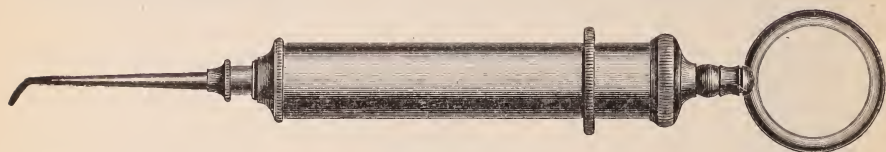
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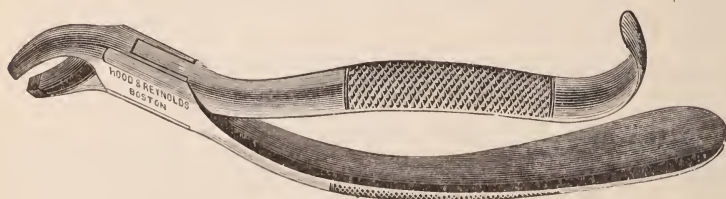


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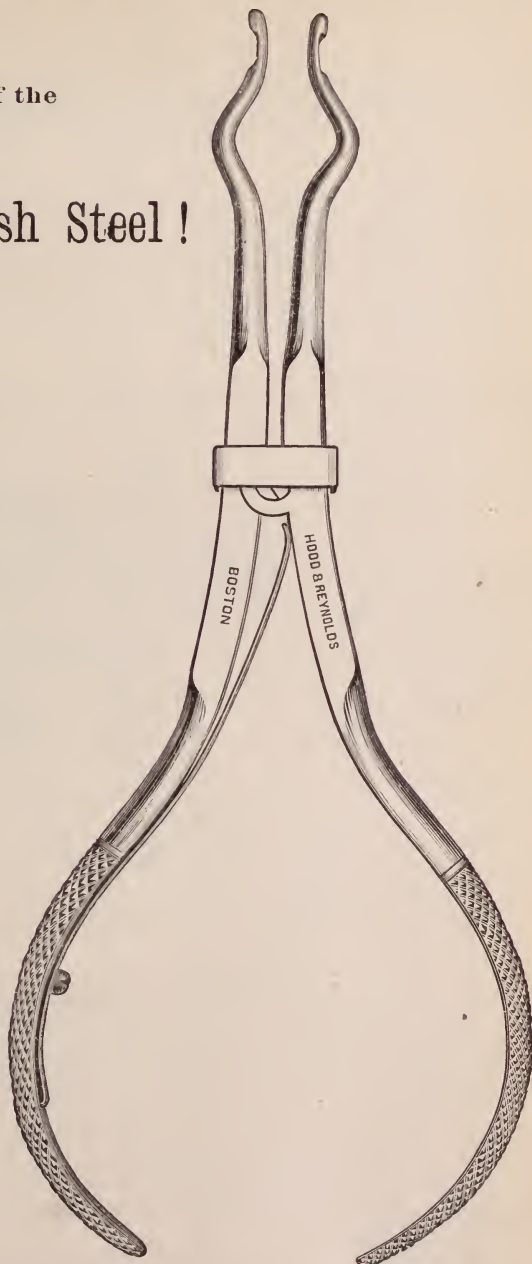
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TO NATURE, OUR TEETH SURPASS ALL OTHER MAKES, AND WHEN WEIGHT  
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FROM THE FIRST NUMBER,

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YEAR, 1882,—TWENTY-FOUR VOLUMES.

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OF the value of this journal to all dentists, but especially to the younger members of the profession, it is needless to speak. The best writing of the most accomplished practitioners, and the most careful and comprehensive editing have combined to keep it easily at the head of dental journalism. Its twenty-four volumes cover the period of greatest advancement both in the theory and practice of dentistry, in the recognition and appropriation of scientific knowledge in physiological and pathological research, and in artistic and mechanical acquirements. It may, therefore, be considered a history of dentistry for the period of its publication. There is certainly little of value in theoretical or applied dentistry so far developed which is not to be found in its pages.

To Dr. A. L. Northrop the dental profession are indebted, originally, for this Index. Having almost daily occasion to consult the volumes of the DENTAL COSMOS, such a ready-reference became to him an absolute necessity, and he accordingly began the task of compiling one solely for use in his own library; but the immense labor involved was too severe a tax upon his time, and necessitated his enlisting the co-operation of Dr. J. E. Dexter, who had special qualifications for such work, and to whom, finally, its completion was intrusted. Its preparation has occupied the leisure of nearly three years. Every topic is indexed under its general and analytical headings,—authors, titles, subjects—whether occurring in Original Communications, Translations, or Proceedings of Societies, Clinical Reports, Periscope, Hints and Queries, or any other department of the journal. It is, in short, an invaluable guide to any information likely to be sought for in any or all of the twenty-four volumes of the DENTAL COSMOS.

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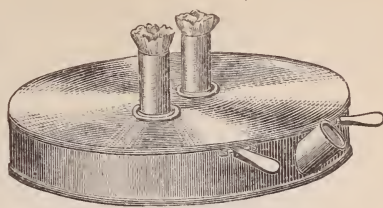


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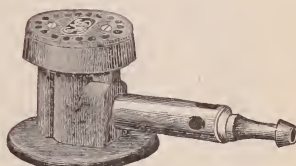
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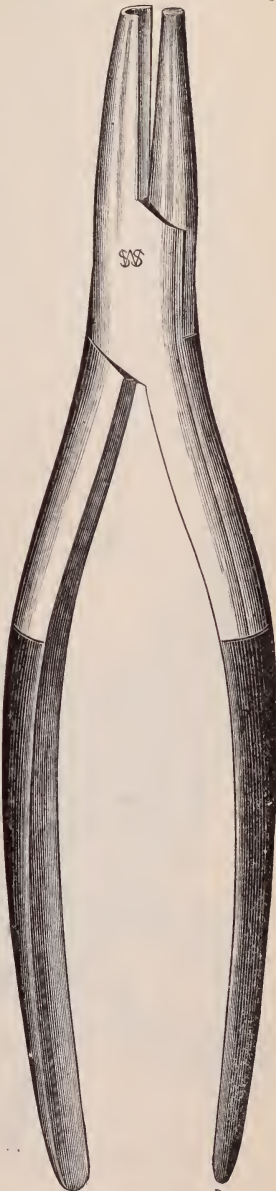
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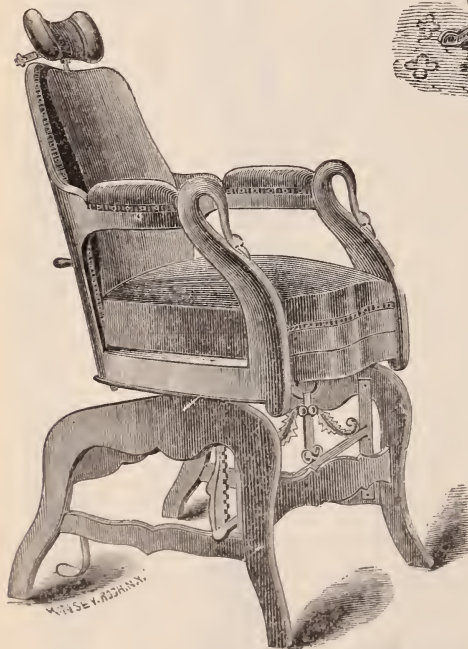
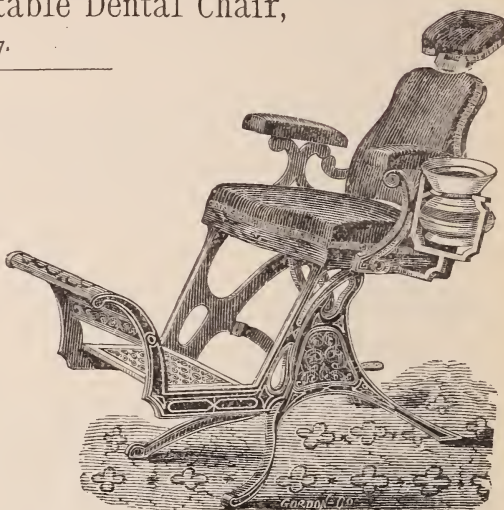
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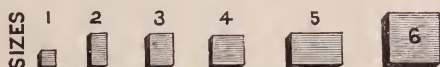
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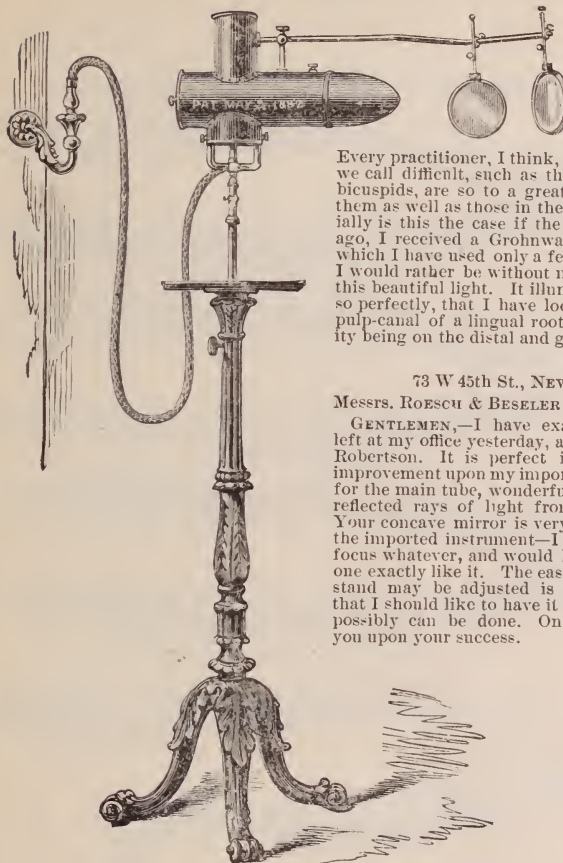
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# The C. Beseler Stomatoscope,

## FOR DENTAL OPERATIONS.

### TESTIMONIALS.



At a meeting of the ODONTOLOGICAL SOCIETY of New York, held January 20, 1880, (see DENTAL COSMOS, April, 1880, p. 186,) Dr C. F. W. BODECKER remarked: "A great necessity in dental operations is a perfect light.

Every practitioner, I think, knows that most of the cavities we call difficult, such as the distal surfaces of molars and bicusps, are so to a great extent, because we cannot see them as well as those in the front of the mouth, and especially is this the case if the sky is cloudy. About a week ago, I received a Grohnwald Stomatoscope from Berlin, which I have used only a few times, but like it so well that I would rather be without my dental engine than part with this beautiful light. It illuminates the mouth of the patient so perfectly, that I have looked up to near the apex of the pulp-canal of a lingual root of a first upper molar, the cavity being on the distal and grinding surface."

73 W 45th St., New York, December 12th, 1880.

MESSES. ROESCH & BESELER:

GENTLEMEN,—I have examined the Stomatoscope you left at my office yesterday, and which you may send to Dr. Robertson. It is perfect in every respect, and a great improvement upon my imported one. The shade I designed for the main tube, wonderfully protects the eye against the reflected rays of light from the inner side of the tube. Your concave mirror is very much better than the one on the imported instrument—I have found no shadows in the focus whatever, and would kindly request you to make me one exactly like it. The ease with which the lantern on the stand may be adjusted is also such a desirable feature, that I should like to have it adopted to my instrument, if it possibly can be done. On the whole, I can congratulate you upon your success.

Yours truly,

C. F. W. BODECKER.

EUFAULA, ALA., }  
Dec. 17th, 1880. }

ROESCH & BESELER:

GENTLEMEN,—The Stomatoscope you sent has arrived in good condition. I am highly pleased with the instrument, and think it will grow in favor

Respectfully,

S. J. ROBERTSON.

MESSES. ROESCH & BESELER:

25 W. 23d St., New York, June 21st, 1881.

GENTLEMEN,—I have used the Stomatoscope manufactured by you more or less for the last seven months, and find by its aid that I can see to operate on dark days, or in the evening, as well as by sunlight. It is easily adjusted so as to throw light to any part of the mouth necessary in filling teeth. I consider it invaluable to the dentist who may have insufficient light for his operations.

Yours Respectfully,

CHAS. MERRITT.

MR. CHAS. BESELER:

KNOXVILLE, TENN., May 9th, 1882.

SIR,—The Stomatoscope received from you six months ago, has been used on dark days and at night, more or less, in operations on the natural teeth to my great satisfaction. The Stomatoscope illuminates the mouth perfectly; cavities situated in the approximal surfaces of molars can be treated as thoroughly as under sunlight. The Stomatoscope is an invaluable instrument where a good light is needed.

Yours Respectfully,

J. T. CAZIER.

### PRICES:

All Highly Finished and Plated,	-----	\$60.00
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Chas. A. Blake.

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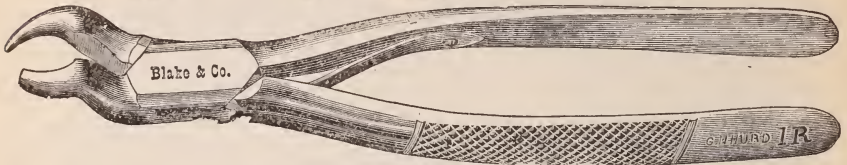
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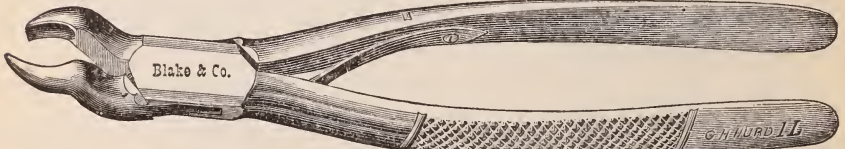
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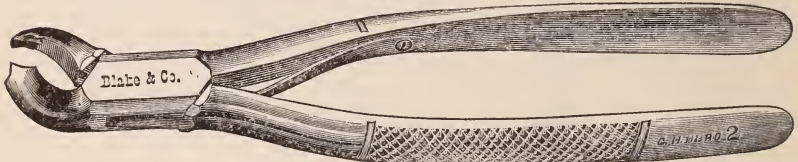
## THE "C. H. HURD" FORCEPS.



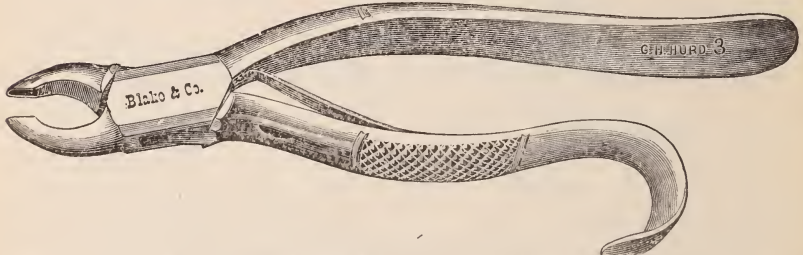
NO. 1. UPPER MOLAR, RIGHT SIDE.



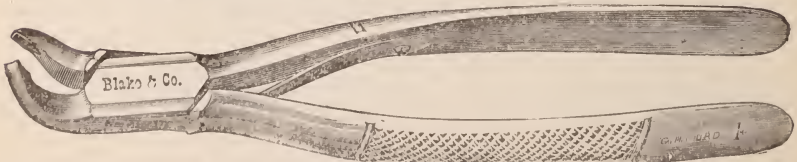
NO. 1. UPPER MOLAR, LEFT SIDE.



NO. 2. LOWER MOLAR, EITHER SIDE.



NO. 3. UPPER INCISOR, BICUSPID AND CANINE.



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These Forceps are specially designed by Dr. G. H. Hurd, for the rapid extraction of teeth with Vitalized Air, Nitron-Oxide, Ether, etc. They have springs fitted in them so as to release the tooth rapidly after extraction. They are made heavier than ordinary forceps. Our patterns were made directly under the supervision of Dr. Hurd himself, and are all guaranteed.

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*Also Sole Manufacturers in the United States of*

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# LABORATORY APPARATUS

(Designed and Patented by Thomas Fletcher, F.C.S., Warrington, Eng.)

*Consisting of Hot and Cold Blast Blow Pipes,  
Ingot Moulds, Blowing Apparatus,  
Gas and Petroleum Furnaces, Ladle Furnaces,  
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B. D. M. Co's Goods for Sale by RANSOM & RANDOLPH, Toledo, Ohio.



# EMERY STRIPS,

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**Cutting Down and Polishing Fillings.**



These strips are put up in gross packages, in six different grades of Emery and Crocus, on strong, thin cloth.—No. FF Emery, finest.—Nos. 0, 00, and 100 are medium.—No.  $\frac{1}{2}$  coarsest. Also, Crocus for finishing, and assorted, *i. e.*, some of all grades. Cut represents full size of packages—except in length—length of strips,  $9\frac{1}{4}$  inches.

# DIAMOND STRIPS

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**FINISHING FILLING.**



These strips are made of a thin, strong paper, prepared especially for the purpose, and assorted as to fineness of material covering the finishing surface. Put up only in packages containing one gross. Illustration shows full size of package. Length of strips, 9 inches.

# FRENCH STRIPS,

—FOR—

**POLISHING FILLINGS.**



These strips are made of a very fine, thin and especially strong French paper, coated on one side with an unequalled polishing material. For the final finish of an approximal filling these strips have no rival. Put up in gross packages, as illustrated above. Length of strips,  $8\frac{3}{4}$  inches. These three styles of strips have proven by far the most *desirable* and *economical* articles for the purpose yet discovered.

**Price, either style, 50 cents per gross.**

TRADE SUPPLIED.

**SPENCER & CROCKER.**

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SUCCESSORS TO

DR. J. R. TANTUM & CO.

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WILMINGTON, DELAWARE.

*Branch Depot, 340 Fulton Street, - BROOKLYN, N. Y.*

We take pleasure in announcing our removal from Nos. 8 and 10 Girard street to our new factory building illustrated above, where we shall continue to produce our superior teeth.

We hope to merit a continuance of your patronage and to hear from many who have never before used our Teeth.

If not familiar with their merits apply to your nearest dealer or send for price lists to

WILMINGTON DENTAL MANUFACTURING CO.  
WILMINGTON, DELAWARE.

For Sale by RANSOM & RANDOLPH, Toledo.

## TO THE MEMBERS OF THE DENTAL PROFESSION. A FEW WORDS ON WATTS' CRYSTAL GOLD.

Office, 56 & 58 William Street, New York.

This standard preparation has now been before the Profession for nearly twenty years, and has won its way to general favor solely and entirely upon its own merits, and the demand for it is increasing year by year. I find, however, that some members of the profession suppose that mercury is used in its manufacture, and for that reason have a prejudice against it. This supposition has been strengthened inadvertently by an imperfectly reported account in the "Dental Cosmos," of the paper on Crystal Gold, read before the American Dental Convention by Dr. Ambler Tees, of Philadelphia, at their Annual Meeting, at Long Branch, in August, 1875.

From "Dental Cosmos," August, 1876: "CORRECTION.—In a synopsis of an essay that I read before the American Dental Convention, last August, at Long Branch, on Crystal Gold, published in the November number of the "Dental Cosmos," for 1875, the impression is conveyed to the reader that mercury is used in its preparation. I state distinctly that the article thus made was called *sponge gold*, the result of Dr. Watt's first experiments, but that the Crystal Gold now in the market was the product of *electrolysis*—decomposition by electricity. On invitation of the convention Dr. Watts explained fully his mode of manufacturing it, and stated distinctly that *no mercury* was used. Your reporter failed to give the remarks of Dr. Watt in his report of the proceedings.

"Respectfully yours, AMBLER TEES, D.D.S."

Therefore, for the purpose of removing this impression, I think it my duty to tell how Crystal Gold came into being, and how it is made, but as the limits to which I am confined will not allow of my doing so *in extenso*, I shall take great pleasure in answering any communication from members of the profession who may wish for further information.

My first preparations of gold were made by using mercury or quicksilver to dissolve it—after being purified and finely divided—and in which menstruum it was crystallized by the aid of heat, the mercury being removed afterwards by nitric acid.

My next preparations were made by the use of oxalic acid, saccharine matters, etc., etc., acting by heat upon properly prepared solutions of gold. Several other preparations of gold were also made by other means. All these different and largely differing preparations were called "Prepared Gold," and were sold under that name. *Finally*, many years since, not being satisfied with any of these, I studied the action of electricity upon the salts of gold, and came to my last and best preparation. It was here, in the wonderful and complete phenomena of electrolysis, among the multitudinous forms of gold which appear and are produced under its mysterious influence that I found, in one formation, the long-sought for desideratum, those beautiful and feathery leaves, so soft and light and ductile, to which has been given the name of "CRYSTAL GOLD." Instead of dissolving the gold in mercury, I dissolve it in acids, and placing the proper amount of the same in a suitably prepared vessel, and suspending therein plates of pure gold, I decompose the solution by the aid of specially arranged electric currents. As fast as the solution loses its gold by the deposition of the crystals, it is resupplied by the suspended plates, in accordance with the well-known laws governing electrolysis, and thus is produced, atom by atom, and in a strikingly similar manner to the growth of the foliage of a forest, a large mass of Crystal Gold, of the same texture and character throughout, and entirely free from any deleterious metallic substances—the gold and solutions being all perfectly pure—and which, by subsequent treatment, is wholly freed from the acid solution in which it was made.

It will thus be seen that in the manufacture of the present Crystal Gold *no mercury is used*, and hence there cannot be in the use of it any of the ill effects which might result from that metal or its alloys.

The gold is sold at \$32 per ounce, but when parties order by the ounce or half ounce, I make a discount of \$2 per ounce, in accordance with the usual custom of other manufacturers. Please address,

N.B.—To be had at all the Dental Depots.

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For Sale by RANSOM & RANDOLPH, Toledo, Ohio.



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# DENTAL SPECIALTIES,

## AMALGAMS AND RUBBER DAM.

I include in specialties my HAND-PIECE for the Dental Engine, and HONED BURS.

I am supplying from my own factory a full Dental Engine Equipment; Burs in all the shapes and sizes, such as are in general use.

Our Honed Burs are of a very *superior quality*; and already are in great demand.

Price of Ordinary Burs, per dozen.....	\$2 40
“ Honed Burs, “ .....	4 40
“ Hand-Piece, .....	10 00

Our Hand-Piece is a universal chuck worked by a threaded nut. It runs upon stout taper or con-bearings. It has required many months of labor and study to arrive at its present state of perfection. Now the large and increasing demand for it is sufficient proof of its excellence.

We have aimed to produce a tool which, while it should be perfectly simple, yet should have *absolute steadiness* in the carriage of the bur, drill or other instrument; and at the same time should have endurance without any *weak points*. We know now that we have succeeded in our effort.

Letters are constantly coming in which give the most ample testimony in favor of our Hand-Piece. We append three of them:

25 WEST 27TH STREET, }  
NEW YORK, July 20, 1881. }

*Dear Sir:* After having used your Hand Piece constantly for several months, it is but justice to tell you how much I am pleased with it. I think the principle upon which it is made, is without exception the best principle for such an instrument, and I believe that a Hand Piece made in this way will run steady and true longer than by any other method. I have used various other hand pieces, and I regard them all as inferior to yours. The objection which I at first felt of its being too large, has entirely passed away, and its size does not now disturb me.

NORMAN W. KINGSLEY.

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I have thoroughly tested your Hand-Piece for the Dental Engine and find it to be excellently well made, holding the points *securely*, with no prospective wear, by which so many hand-pieces *soon* become useless. It is the best Hand-Piece now in the market.

ISAAC J. WETHERBEE, D. D. S.,  
*President Boston Dental College.*

NEW YORK, December 21, 1881.

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Very truly, A. L. NORTHROP, 44 West Forty-sixth St.

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An experience of twenty-five years has enabled us to supply a line of instruments that has given general satisfaction, and an increasing business is, we feel an evidence that our efforts to supply

FIRST-CLASS ARTICLES AT REASONABLE RATES

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SUPPLYING THE LATEST IMPROVEMENTS AS THEY APPEAR.

Experience has shown the wisdom of dividing the two branches of our business (Forceps and small instruments), each member of our firm confining his personal attention to a department, thus insuring the care and attention that is necessary to furnish First-class Instruments. All kinds of repairing will receive the same attention as new work.

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Wood Engraving, Electro and Stereotyping,

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All orders for Cards, Bill Heads, Note Heads, or, in fact, anything in the Printing line, sent to us through RANSOM & RANDOLPH, will receive prompt attention.

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The following retail rates for Lawrence's Amalgam are hereby announced ;

Price, per single ounce,	-	-	-	-	-	-	-	\$3.00
" two ounces,	-	-	-	-	-	-	-	5.00
" three ounces,	-	-	-	-	-	-	-	7.00
" four ounces,	-	-	-	-	-	-	-	9.00
" five or more ounces,	\$2.00 per ounce.							

Beware of frauds, and purchase only of respectable dealers, their duly authorized agents, or of the inventor and only manufacturer.

AMBROSE LAWRENCE, M. D., 476 Columbus Ave., Boston, Mass.

This Old and Reliable AMALGAM always in stock and for Sale by  
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MANUFACTURED BY

EUGENE DOHERTY,

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WARRANTED TO BE

THE STRONGEST AND MOST UNIFORM RUBBER  
MANUFACTURED.

It is the **TOUGHEST** and Most Durable Rubber Made. Vulcanizes same as Ordinary Rubber.

**SAMSON RUBBER.**



MANUFACTURER OF ALL KINDS OF

## Dental Rubbers and Gutta Perchas

### PRICE LIST OF DENTAL RUBBERS AND GUTTA PERCHAS.

No. 1 Rubber, per lb.....	\$2 50	No. 1 Weighted or Amalgamated Rubber, per lb.....	\$4 00
No. 2. Rubber, per lb.....	2 50	No. 2 Weighted or Amalgamated Rubber, per lb.....	4 00
Samson Rubber, per lb.....	3 00	Black Weighted or Amalgamated Rubber, per lb.....	4 00
Black Rubber, per lb.....	2.50	Weighted Gutta Percha, per lb..	4 00
Flexible or Palate Rubber, per lb.	2 75	Adamantine Filling or Stopping, ....	
Gutta Percha for Base Plates, per lb.....	2 50		
Vulcanite Gutta Percha, per lb..	3 50		

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentist in the country on receipt of price, and stating that they cannot get them at the Dental Depots in or near their place of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

**EUGENE DOHERTY,**

444 FIRST ST., BROOKLYN, E. D., NEW YORK.

For Sale by **RANSOM & RANDOLPH.**

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## ARTIFICIAL TEETH

AND DEALER IN

### DENTAL GOODS OF ALL KINDS.

Our twelve years' experience in the manufacture of ARTIFICIAL TEETH, (during which we have spared neither expense or labor in our endeavors to manufacture the best Teeth,) we feel has resulted in our efforts being crowned with success, from the many voluntary Testimonials we are constantly receiving, giving expression to these facts.

*"By actual test for months, there is less than half the breakage in yours than in the highest priced Teeth."*

*"They would be preferred if the price were equal."*

*"The texture of the Teeth and Gums is excellent."*

*"The colors are natural and well blended."*

*"The styles are beautiful, as well as being readily adapted to the mouth"*

*"Your New Double Headed Pins are unexcelled."*

*"Constituting on the whole a Tooth that is equal, if not superior, to any in the market."*

We desire to return our thanks to those who have so kindly volunteered these testimonials.

To those who have never used our Teeth, we would request that they give them a trial.

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In Sets of 14, - - - - - \$1.00 Per Set.  
Postage free to all parts of the United States.

Partial Sets, - - - - - 8 Cents Per Tooth.  
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A liberal discount for quantities.

If your Dealer does not have them, send to us direct.

Satisfaction guaranteed, or money refunded.

N. B.—All our Gum Sections bear our Trade Mark as above.

For sale by - **RANSOM & RANDOLPH, Toledo, Ohio.**

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FIBROUS AND TEXTILE

# Metallic Filling for Teeth

And for Lining Rubber and Celluloid Plates.

This is a new production; a combination of metals without mercury, easily adapted to the walls of the teeth, and a sure preventive for inflammation of the mucous surfaces of the mouth.

1st.—The material is so soft that it is more easily introduced into difficult places between the teeth than *any other metallic filling*.

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3d.—It is more certain of successful results in the hands of persons who cannot make first class operations with gold.

4th.—It does not soil or change color in the mouth.

5th.—The welding properties are greater than any preparation except sponge gold.

6th.—Gold welds to it as readily as gold welds to itself.

7th.—It finishes easier than gold, and retains a fine and brilliant polish.

8th.—It is superior for buccal, lingual and cervical walls, and in conjunction or interlocked with gold, will make a better filling than gold itself.

9th.—It is a saving of more than half the expense and time.

10th.—This material, though fibrous like Felt Foil, *is not* felt foil, as it contains no mercury.

11th.—It is more of a non-conductor than gold, and there is less danger of trouble from thermal changes in large cavities with the walls lightly covering the nerves.

12th.—In working this material, coarse and sharp serrated points should be used, as everyone is aware that where the serrates are deep there is more surface of the metal to come in contact; and all pure metals will unite by heat and pressure when the surfaces are free from oxidation.

Manufactured by the Robinson Dental Manufacturing Co., Jackson, Mich.

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## To those Practicing the Specialty of Dentistry.

- (1.) Do you desire that the standard of dental practice be elevated?
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- (3.) Would you have the Physician your co-worker or your antagonist?
- (4.) Is it your desire to have him recognize you—his superior as a scientific dental or oral surgeon, instead of a mere mechanic?
- (5.) Would you prefer, that he would refer all his patients requiring dental treatment to a reputable Dentist or to leave them, perchance, to fall into the hands of a dental charlatan?
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*Easily made Cohesive, always Reliable and Full Weight.*

Receives our personal attention in refining and preparation throughout

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\$ 4.00	-	-	-	per $\frac{1}{8}$ oz.		\$29.00	-	-	-	per 1 oz.
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Norwich, Conn.

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IOWA CITY, IOWA.

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For further particulars address

L. C. INGERSOLL, Dean,

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Students who have attended one course of lectures in any other Dental or Medical School in good standing, may be examined for the degree of D.D.S. (Doctor of Dental Surgery) after attending a single course of lectures.

Graduates of the Dental Department of the University of Pennsylvania may become candidates for the degree of Doctor of Medicine (M.D.) after attending one additional course of lectures, but the Secretary of the Medical Faculty should be notified of such intention before the beginning of the second course.

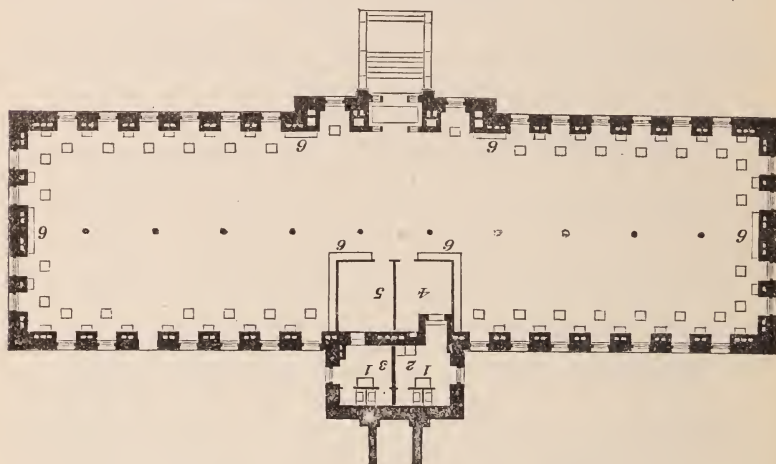
(See next page)



# UNIVERSITY OF PENNSYLVANIA.

## DENTAL DEPARTMENT.

The operating-room is 151 feet in length by 46 feet in width. It is lighted by windows on all sides, thus affording 394 feet of window frontage. The room is furnished with private closets for the safety of the books, instruments and clothing of the students; it occupies the first story and everything has been done to make it perfect in its adaptation to the practical work of operative dentistry. the arrangement of the windows so as to command the best light has received careful consideration, and we may safely say that it is unequaled anywhere. In front of each window is placed a Morrison Chair of the latest and most approved pattern, also a handsome nickel-plated movable bracket, and a neat walnut table for the accommodation of instruments, etc. Battery-wires are arranged to a number of the chairs for the use of electric pluggers.



PLAN OF DENTAL OPERATING ROOM.

## GRADUATION IN MEDICINE.

Dental students wishing to take the degree in Medicine also, *can do so* in three years from the beginning of their studies; *but candidates must notify the Secretary of the Department of Medicine of such intention before the beginning of the second course of lectures.* They then must add to their studies of the second year which they would take as students of dentistry, Medical Chemistry, Topographical Anatomy, General Pathology and Morbid Anatomy, Therapeutics, Theory and Practice of Medicine, Surgery, and Obstetrics, with clinics medical and surgical. At the end of this year they are examined in Medical Chemistry, Anatomy, Physiology, and Pharmacy, together with the dental branches proper, when, if qualified, they receive the degree of D.D.S., and pass on to the third year in medicine,

To such graduates the Spring course is open for practice at the chair, or in the dental laboratory, free of additional charge.

In the third year they take the studies of the third-year medical students, as laid down in the Medical Curriculum (see p. 10 of the Announcement of the Medical Department), and at the end of the year pass an examination in Therapeutics, General Pathology and Morbid Anatomy, Theory and Practice of Medicine, Surgery, and Obstetrics.

### THE REGULAR OR WINTER SESSION.

In order to facilitate work in the practical departments, and to fully employ the students' time, the regular winter sessions are so arranged that the first-course student is required to devote the morning hours equally between *dental and chemical laboratory work*. At the end of the first session he is examined in chemistry and materia medica, when, if qualified, he passes into the second class.

The second year student, having passed in those two branches, is not required during his second course to attend the lectures upon them; thus he has the entire forenoon of each day for practical dental work.

It is the desire of the Faculty to offer every opportunity for the acquirement of practice in operative and mechanical dentistry, and as many large operations in the mouth require a morning light, and more time in their performance than an afternoon affords, permission will be given to the second-course student to devote the morning hours to this object, when required.

It is believed that this plan of *grading the course*, and of affording the first-year student an opportunity of coming forward for examination in the branches of chemistry and materia medica, will not only prove an economical arrangement of his time, but will really facilitate his labors in the acquirement of knowledge in the remaining branches.

### PLAN OF FINAL EXAMINATIONS.

**No Preliminary Examinations are demanded.**

The first-course student will, at the end of the term, be required to pass a *final* examination in Chemistry and Materia Medica, and, if successful, he enters the second-class year. If, however, he is not qualified, a *second examination* is afforded him at the beginning of his next regular course (October 2).

The final examination of the second-course student will be in Dental Therapeutics, Anatomy, Physiology, Operative Dentistry, Mechanical Dentistry, and Metallurgy.

Matriculates who have attended one full term in another dental or medical school of good standing, will be admitted as students of the graduating class.

The session will commence on Monday, October 2, and continue until the first of April ensuing. The course is so arranged that twenty lectures will be delivered each week on the various branches taught in the College, a synopsis of which is given on pp. 89 and 90 of the General Catalogue.

Students of one department may attend the lectures and recitations in any other department, during unoccupied hours, without extra charge.

**CHAS. J. ESSIG, M. D., D. D. S.,**

*Secretary of the Dental Faculty, n. e. cor. Sixteenth and Locust Sts.,*

**PHILADELPHIA.**

In directing letters addressed to this department, correspondents are requested to write the word Secretary (not Dean) under the name.

Preliminary examinations are, for the present, not required.

# OHIO COLLEGE

—OF—

# DENTAL SURGERY

No. 29 College Street, Cincinnati, O.

THIRTY-SEVENTH ANNUAL SESSION, 1882-83.

## FACULTY.

WM. CLENDENIN, M.D.	Anatomy and Surgery.
J. S. CASSIDY, M.D., D.D.S.	Chemistry and Materia Medica.
H. A. SMITH, D.D.S.	Clinical Dentistry.
C. M. WRIGHT, D.D.S.	Pathology and Therapeutics.
J. R. CLAYTON, D.D.S.	Physiology and Histology.
FRANK BELL, D.D.S.	Mechanical Dentistry and Metallurgy.
G. W. KEELY, D.D.S., Lecturer on Causes and Management of Irregularities of the Teeth.	
<hr/>	
G. S. JUNKERMAN, D. D. S.	Demonstrator of Chemical Analysis.
H. L. MOORE, D.D.S. }	Demonstrators of Operative Dentistry.
J. M. CLYDE, D.D.S. }	

This Institution is a DENTAL COLLEGE IN THE STRICTEST SENSE. The property is owned by an Association of Dentists, numbering one hundred. The Faculty is composed of Practitioners of Dentistry, whose purpose it is to give a thorough course of instruction in the theory and practice of Dentistry.

The College Building was designed, erected, and is exclusively used for a Dental School. The reception, lecture, clinical and dissecting rooms, and mechanical laboratory are large, well lighted and admirably arranged for the purposes of dental education. Located in the center of one of our most populous cities, where there is no other Dental School, the supply of patients is abundant, and at times in excess of the requirements for clinical practice. The College Infirmary will be open every afternoon (except Sundays), during the session, thus affording the students ample opportunities to engage in *actual practice* under the direction of the Professors and Demonstrators.

## GRADUATION.

The candidate must be twenty-one years of age. He must have attended two courses of lectures in a Dental or Medical College, the last of which must be in this institution. A reputable dentist in actual practice five years, may be examined for the degree of D.D.S., after attending one full course of lectures.

## FEES.

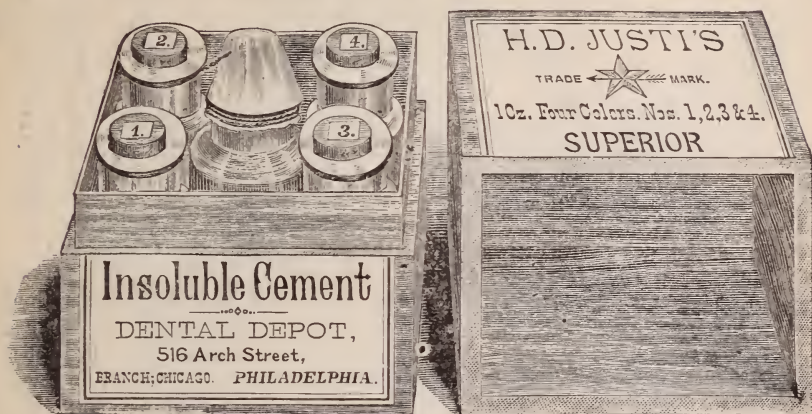
Matriculation fee (but once)	\$ 5 00
Professors' tickets for one session (whether Junior or Senior)	75 00
Professors' tickets for second year.	50 00
Dissecting ticket, including material	10 00
Demonstrator of Chemical Analysis	10 00
Diploma Fee,	25 00

The session begins the 10th of October, and continues until the first of March. Board can be had for from \$4.00 to \$6.00 per week.

For further information, address

**H. A. SMITH, Dean,**  
286 Race Street, CINCINNATI.

# H. D. JUSTI'S SUPERIOR INSOLUBLE CEMENT.



*In bringing this Insoluble Cement to the notice of the Dental Profession I do not hesitate to assert, that differing, as it does from all Oxychlorides of Zinc, it is not only equal, but Far Superior to any Cement hitherto introduced.*

*It becomes harder than any other Cement known, will permanently resist the acids of the mouth, neither expands nor contracts, and attaching itself to the walls of the cavity it prevents the penetration of moisture and arrests decay.*

*It is composed entirely of non-irritant substances, and exercises a soothing influence, allaying pain when brought in contact with sensitive dentine.*

*It is made in four different colors, thus enabling the operator to produce any variety of shades, in order to match the patient's tooth.*

No. 1—Light. No. 2—Medium. No. 3—Yellow. No. 4—Blue.

## PRICES.

1 oz. box, 1 color,	No. 1, 2, 3 or 4,	-	-	-	\$3.00
1 " " 4 colors,	" 1, 2, 3 & 4,	-	-	-	3.00
½ " " 1 color,	" 1, 2, 3 or 4,	-	-	-	1.50
½ " " 2 colors,	" 1 & 2 or 3 & 4,	-	-	-	1.50

**H. D. JUSTI,**

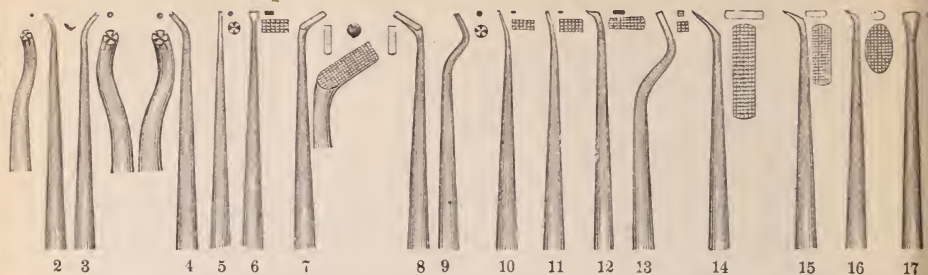
DENTAL DEPOT,

Branch, Chicago, Ill.

516 Arch St., Philadelphia.



# PROF. J. A. WATLING'S SET OF PLUGGERS.



This set of PLUGGERS was originally designed by Prof. WATLING for his own use, and also for instruction at college, but he has made several alterations and modifications since (of which the above representation is the latest and most correct), reducing the points considerable in thickness, so as to avoid the unnecessary bulk which most Pluggers possess, leaving sufficient material, however, to insure strength. The serrations are also much finer than before, making the set a valuable addition to a dental office. In the above cut the number of serrations contained in each instrument are shown magnified. The small cuts represent the exact size of each point.

Prof. WATLING's description of their separate uses is as follows: Nos. 1, 2, 3 and 4, commonly called "Cork Screw," or "Cow Horn," Right and Left Instruments, will be found useful in filling most of the approximate cavities, where they are deep, with access not very free. No. 5 may be used for filling starting points and small cavities, where access is direct. No. 6 is straight and very finely serrated, and may be used where access is direct, and great solidity of gold is desired. Nos. 7 and 8 are Right and Left foot Instruments, for working on approximal and posterior Bicuspid and Molar cavities. No. 9 is small, round, and bayonet shaped, and will be found useful in many of the posterior cavities. Nos. 10 and 11 are slightly curved, only differing in size; they are thin on the point, and very finely serrated, designed to work around the border of cavities, and for filling fissures. No. 12 is a fine foot shape. No. 13 is a large bayonet-shaped instrument, useful in filling posterior cavities. Nos. 14 and 15 are different sized foot instruments. No. 16 is a small, very oval-faced, foot instrument. No. 17 is a burnisher.

## PRICES.

As shown in cut; blue lacquered handles, - - -	per set, \$16.75
As shown in cut; blue lacquered handles, separately, Nos. 1, 2, 3, 4, 5, 9, 17, each, - - -	70
As shown in cut; blue lacquered handles, separately, Nos. 6, 10, 11, 12, 13, each, - - -	1.00
As shown in cut; blue lacquered handles, separately, Nos. 7, 8, 14, 15, 16, each, - - -	1.70
As shown in cut; Nickel-plated, per set, - - -	19.00
Octagon Taper end (Abbott's style), per set, - - -	12.75
Price of Morocco case for same, - - -	2.00

H. D. JUSTI,

BRANCH, 66 E. Madison St,  
CHICAGO, ILL.

DENTAL DEPOT,  
No. 516 Arch St., PHILADELPHIA.

For Sale by RANSOM & RANDOLPH, Toledo, O.

# H. D. JUSTI'S NEW ENGINE PLUGGER,

Patented, May 13, 1879.

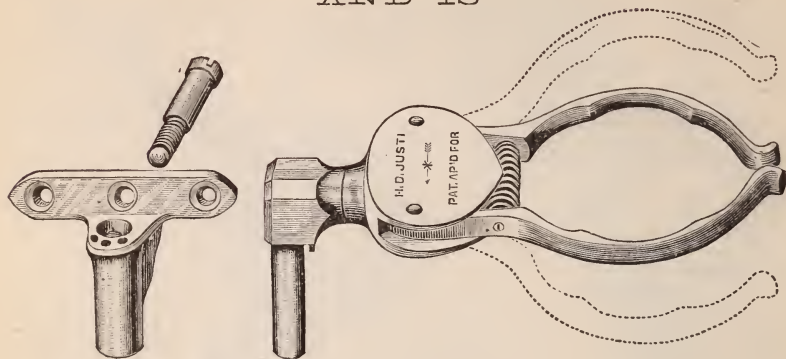
AND

Re-issued, Feb. 17, 1880.



# UNIVERSAL CUSPADOR CLAMP.

WILL HOLD ALL SIZES OF DENTAL CUSPADORS,  
AND IS



ADAPTED TO ALL DENTAL CHAIRS.

This is undoubtedly the simplest and most serviceable Cuspador Clamp ever offered to the profession.

It is made of Bronze metal, handsomely Nickel-plated; the clamp is self-locking, being held together by a strong steel spring, (as shown in cut;) it therefore holds the Cuspador so firm that there is no danger of its being knocked off, as is often the case with the plain holders. The dotted lines in the above illustration represent the clamp when open to its full extent.

PRICE, \$3 00.

## *Prices of Cuspadors and Accessories.*

No. 1, including Gold Catcher,	- - - - -	\$5 00
" 2, " " and Cap,	- - - - -	1 50
" 3, - - - - -	- - - - -	2 00
" 4, including Gold Catcher,	- - - - -	4 00
Glass Funnel, - - - - -	- - - - -	75
Nickel-plated Funnels,	- - - - - each	2 00
Gold Catcher for Nickel-plated Funnel,	- - - - -	50
" " " Cap for No. 2,	- - - - -	50

H. D. JUSTI,

BRANCH, CHICAGO, ILL.

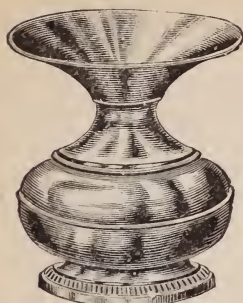
No. 516 Arch St., Philadelphia.

For Sale by Ransom & Randolph.

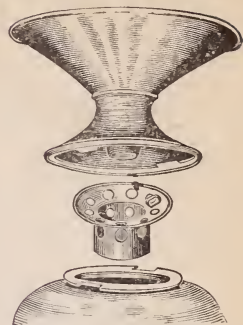


# CUSPADORS FOR DENTAL CHAIRS.

No. 1.



R. LEDIG'S PATTER,  
Heavy Spun Brass, Nickel-plated.



Section of No. 1, showing Fastening.

No. 2.



Light Spun Brass, Nickel-plated.



Cap and Gold Catcher  
for No. 2.

No. 3.



BAUER'S PATENT  
Floor Spittoon, with detachable cap on  
bottom, for cleansing purposes. Is so  
made that contents cannot escape  
in case of upsetting.

No. 4.



Spun Brass, Nickel-plated.



Glass Funnel for Nos. 1 and 4.



Nickel-plated Funnel, 3 Sizes, 9½, 10 and  
10½ in. diam., 5½ in. deep.

FOR PRICES SEE OPPOSITE PAGE.

BRANCH, CHICAGO, ILL.

H. D. JUSTI,

No. 516 Arch St., Philadelphia.

For Sale by Ransom & Randolph, Toledo, Ohio.



# LIQUID NITROUS OXIDE

## THE ONLY SAFE ANÆSTHETIC.

Manufactured under the supervision of thorough Chemists, and of chemically pure Nitrate of Ammonia.

Furnished in 100 and 500 gallon cylinders, usually holding a few gallons more.

Parties having cylinders of other makes, and favoring me with their orders for refilling in the future, may have their old valves replaced by the new improved Keystone valve, which is so constructed, that when properly closed, the escape of gas is impossible.

*Printed Directions how to use the Valve and prevent the escape of gas accompany each Cylinder. It is very important that they should be carefully read and strictly observed.*

*Before returning a Cylinder for refilling, the Valve should be closed the same as though the Cylinder contained gas.*

### PRICES OF SEPARATE PARTS.

Cylinder containing 100 gallons gas,	. . . . .	\$16 00
“ “ 500 “ “ . . . . .		44 50
Refilling 100 gallon cylinder,	. . . . .	6 00
“ 500 “ “ per gallon, 4½ cents,	. . . . .	22 50
Gas Bag, about 4½ gallons capacity,	. . . . .	3 00
“ “ 7 “ “ . . . . .		5 00
Metalic Connections for Gas Bag, per set,	. . . . .	75
Inhaling Tube, worsted covered, 4 ft. lengths, per ft. 50 cents .	. . . . .	2 00
Inhaler, nickel plated,	. . . . .	8 50
Union, “ for connecting bag with cylinder,	. . . . .	1 50
Wheel-shaped key,	. . . . .	25
Wrench, nickle plated, for screwing down gland or packing nut,	. . . . .	50
Stop Cock, used when detaching bag from cylinder,	. . . . .	1 00
Morocco Case, with complete fittings,	. . . . .	12 00
New Universal Tripod,	. . . . .	5.00

H. D. JUSTI,

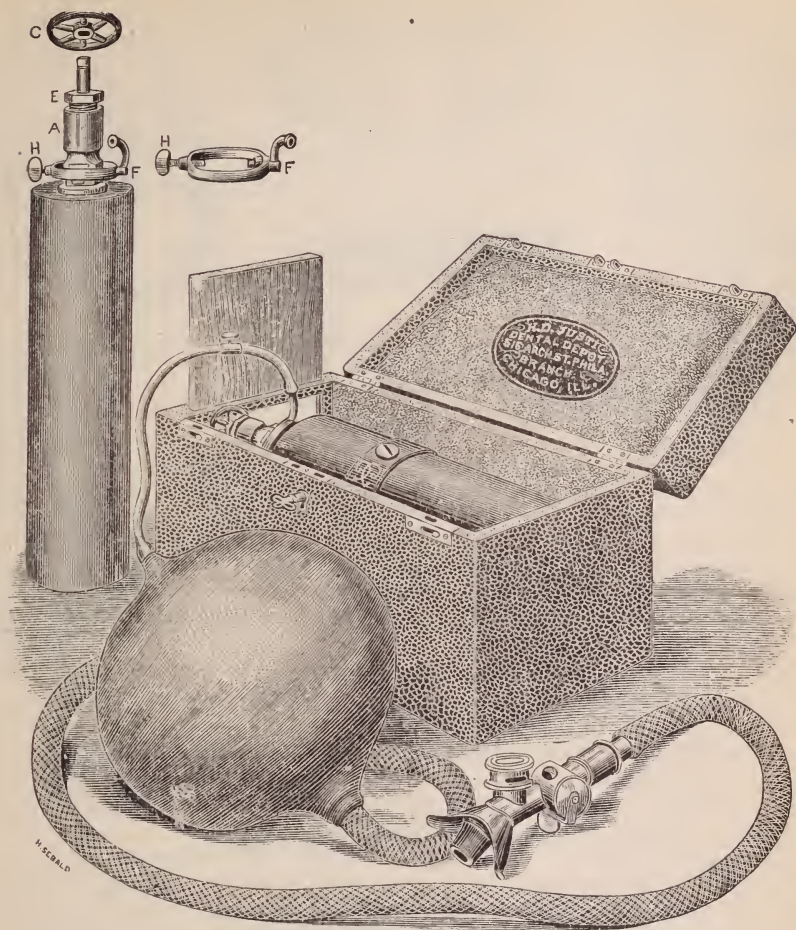
516 ARCH STREET,

Branch, CHICAGO, ILL.

PHILADELPHIA.

*For Sale by RANSOM & RANDOLPH, Toledo, Ohio.*

# COMPLETE SURGEON'S CASE.



The Case is made of well seasoned wood and put together in the most substantial manner, covered with morocco and lined with silk velvet. It contains an iron cylinder, with 100 gallons gas and all the necessary appliances, as illustrated above.

The Case has also a strong cast steel ring, in which the cylinder is firmly held by means of a heavy set screw.

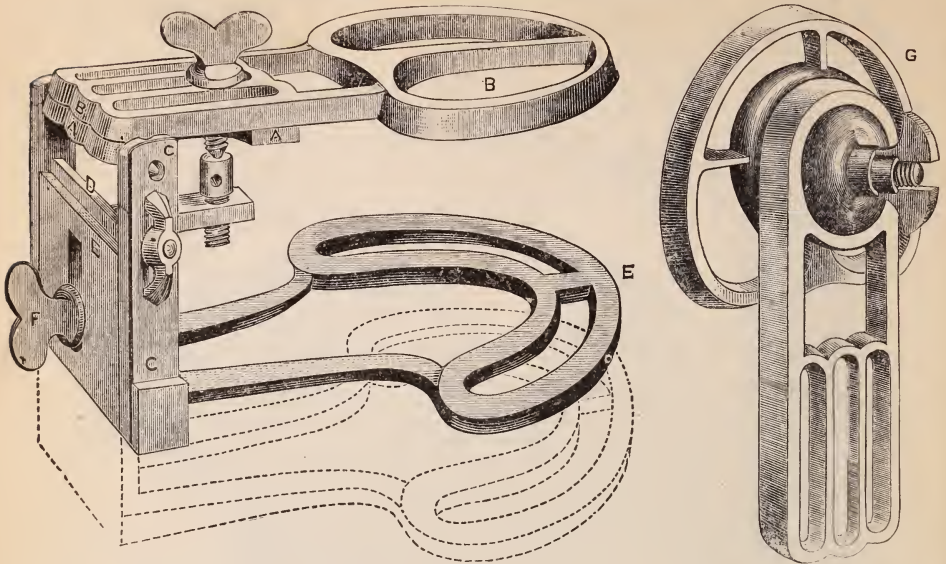
It is also furnished with a stop-cock, nickel-plated, placed on the tubing between the union and bag, allowing the bag to be detached after filling.

## PRICES:

Complete with $4\frac{1}{2}$ gallon gas bag, and 100 gallon cylinder filled,	.	.	.	\$42.00
Complete with 7 gallon gas bag, and 100 gallon cylinder filled,	.	.	.	44.00

*For Sale by RANSOM & RANDOLPH, Toledo, Ohio.*

WITH THE

**Improved Ball and Socket Attachment.****Invention of Dr. D. L. OVERHOLSER.**

The superior merits of the No. 1 and 2 Articulators are already well known to the profession, and with the additional improvement of Dr. Overholser I can confidently recommend the No. 3 as the Leading Articulator in the market.

The IMPROVEMENT consists of a Ball and Socket Attachment to the upper jaw frame *G*, which meets a requirement not heretofore found.

The careful dentist who in adjusting teeth tries them in the mouth, very often finds that owing to the tipping of the trial plate in taking the bite, the teeth do not articulate in the mouth as they do on the articulator; to obtain a movement which will enable him to make such a change as to bring the relation on the articulator the same as in the mouth—is the great desideratum, which is found in the universal ball and socket joint.

By a slight loosening of the thumb-screw, it affords any desired adjustment of the upper jaw frame, and by tightening the same screw, it again becomes absolutely firm and unmoveable.

**DESCRIPTION.**

The lower jaw *E* is adjustably attached to the bracket *D*, and can be lowered (as shown by dotted lines in cut.) or retained at any point desired by the thumb-screw *F*, the upper jaw *B* or *G*, with a forward and backward movement, is also retained in position by a thumb-screw, adjustably attaching the jaw to plate *A*, which swings on conical pivots in conical cavities; this effectually prevents any lateral motion in plate *A* or of one jaw in relation to the other, when regulating the bite.

The plate *A*, with its attached jaw frame *B*, can be detached from the bracket in one piece, as occasion may require, by turning the catch on spring *C* to either side, and then raising the frame *B* on that side, which will cause the spring *C* to press outward, when the cone pivot on plate *A* will slide up through the V-shaped groove and thus release the upper jaw from the bracket. It is re-inserted by first inserting the opposite pivot in its corresponding cavity in the bracket, and pressing lightly on the other side the pivot presses the spring outward and again slides into position, then turn the small catch on spring *C*, as shown in cut, which makes it as firm as if swinging in solid columns.

Price, No. 1,	-	-	-	-	-	-	\$1.75
" " 2,	-	-	-	-	-	-	2.00
" " 3,	-	-	-	-	-	-	2.50

**H. D. JUSTI.**

BRANCH:

66 E. Madison St., Chicago.

DENTAL DEPOT:

516 ARCH STREET, Philadelphia.



# MAGNIFIQUE Modeling Composition

---

**S**UPPLIES a want long felt by the Profession, by rendering impressions as correct as plaster, and enabling the taking of true impressions of the fine parts and the unevenness of the palate, that which

## *COULD NOT BE DONE*

with any other compound heretofore offered.

A few of its numerous advantages over others are :

1. In warm (not hot) water, it softens quicker and more uniformly.
2. Although it hardens quicker and more uniformly in the mouth, it neither expands nor contracts during the operation, nor does it become as brittle as others.
3. While being taken out it is NOT SO LIABLE TO DAMAGE.
4. It has neither unpleasant SMELL NOR TASTE.
5. If handled properly, as directed, it can be used repeatedly without losing its plastic powers.
6. In using it for improvised plate models, it can be ENTIRELY and EASILY removed by very hot water, leaving everything PERFECTLY CLEAN. This much faster and cheaper process makes it preferable to Gutta Percha or Wax.
7. For repairing purposes, it is better than wax or any other compound, its toughness and hardness not allowing anything attached to loosen.

PRICE PER BOX      -      -      -      \$1.00.

---

## *DIRECTIONS FOR USING.*

In softening it for impressions, the water should NOT be hot enough to melt it, because if heated too much, it becomes sticky, — a temperature of about 128 degrees is sufficient; whereas if heated TOO LITTLE, it would not give the true impression of the palate, and its unevenness. It should be brought from the water to the mouth of the patient at once.

# H. D. JUSTI,

SOLE AGENT FOR THE UNITED STATES & CANADA,

516 ARCH ST., PHILADELPHIA.

(BRANCH, CHICAGO)

For Sale by RANSOM & RANDOLPH, Toledo.



# Porcelain Teeth.

---

*Beginning at Vienna, in 1873, where I made my first display, I have received successively at the Six World's Fairs the Highest Award for **ARTIFICIAL TEETH**; this being the most important branch of my business and all that I exhibited.*

*The greatest proof ever extended for Superiority to any manufacturer of **PORCELAIN TEETH**, for their Strength, Adaptation and Natural Life-like Appearance, was received by me through the Report of the Judges; Centennial International Exhibition 1876.*

---

## EXTRACT

### FROM THE GENERAL REPORT OF THE JUDGES ON AWARDS OF GROUP XXIV.

"**H. D. JUSTI** EXHIBITED NOTHING BUT TEETH, but his display was beautiful in the extreme. In color, translucency and texture, they were all that could be desired; they were a faithful reproduction of the physiological characteristics of the natural organs, both to the individual teeth and relatively to the entire set. Their conformation with reference to close and easy adaptation to the maxillary arch showed careful study of the needs of both patient and operator. Their various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, was so perfect that when in the mouth no suspicion of their artificial nature would be entertained. The disposition of tooth-material was so skillfully managed as to secure the greatest amount of strength with the least bulk; and the insertion of platinum pins was so arranged as to render their displacement an almost impossible accident."

## H. D. JUSTI,

BRANCH:

No. 66 E. Madison Street, Chicago.

PRINCIPAL DEPOT:

No. 516 ARCH STREET, Philadelphia.

Send in your Subscription for 1883.

VOL. III.

FEBRUARY, 1883

No. 2.

Serial  
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32  
Feb.  
1883  
copy 2

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STATE JOURNAL  
OF  
DENTAL SCIENCE.

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EDITED BY  
GEORGE WATT, M. D., D. D. S.,  
XENIA, OHIO.

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EDITED BY

GEORGE WATT, M. D., D. D. S.,  
XENIA, OHIO.

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XENIA, OHIO.

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